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ABSTRACT

The purpose of the publication is to disseminate, in circles directly concerned with the theory and practice of functional literacy training, the fundamental principles and essential pedagogical methods yielded by the pursuit of Unesco's Experimental World Literacy Program. The guide is an attempted synthesis of the many and various experiments undertaken in the framework of the pilot projects and limited operations for functional literacy training. Part 1 is a guide to determining a pedagogical strategy adapted to the aims of a development program: a preliminary inventory of objectives and problems introduces an exploratory analysis of the context, whose main objective is the definition of an educational strategy. Part 2 guides the application of the pedagogical strategy: the definition of contents and the establishment of didactic progressions; the elaboration of pedagogical methods and machinery; and utilization of the methods and materials by recruitment and training of instructors, the formation of literacy groups, and the organization of group activities. (Author/AJ)

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Experimental World Literacy Programme

Practical guide to functional literacy

A method of training for development

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Preface

The purpose of the present publication is to meet the need to disseminate, in circles directly concerned with the theory and practice of functional literacy training, the fundamental principles and essential pedagogical methods yielded by the pursuit of Unesco's Experimental World Literacy Programme, at its present stage of development.

Since the World Congress of Ministers of Education on the Eradication of Illiteracy (Teheran, September 1965), interest in functional literacy training has grown steadily, and Member States' efforts to put it into practice have multiplied. The whole purpose of the Experimental World Literacy Programme being to provide more efficient instruments for combating illiteracy than those hitherto available, the circulation of the first pedagogical lessons which can already be drawn from it is both a duty and an absolute necessity for Unesco. In addition, it appears all the more urgent to present the lessons in the form of a practical guide, inasmuch as the world has entered the Second Development Decade, of which the campaign to eradicate illiteracy is an essential element.

As an attempted synthesis of the many and various experiments undertaken in the framework of the pilot projects and limited operations for functional literacy training, the guide is addressed more particularly to adult-education instructors, engineers and technicians in agriculture and industry in charge of the training of illiterate labour forces plus the international and national specialists responsible for launching and running the Decade's functional literacy programmes. Unesco hopes that readers will find in it subjects for reflection and an inspiration to action, as well as practical information of help to them in the accomplishment of their tasks.

The present work is the product of a collective effort[1] in which all those sharing in the execution of the Experimental World Literacy Programme on many levels have taken part. It has been written by C. Bellahsène of the Unesco Secretariat, a specialist in the methodology of functional literacy training.

1. See *Literacy 1965–1967*, Paris, Unesco, 1968, and *Literacy 1967–1969. Progress Achieved in Literacy throughout the World*, Paris, Unesco, 1970.

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Introduction

Literacy training aims at promoting man's adjustment to change so that he may become both the agent and the object of development.

Closely geared to the economic and social development priorities, such training is designed as a component part of the development projects.

FUNCTIONAL AND TRADITIONAL LITERACY TRAINING[1]

Functional literacy training is distinguished from so-called traditional literacy training in that it ceases to be an isolated, separate operation, let alone an end in itself, but treats the illiterate in a group context in relation to a given environment, and with a view to development.

The basic characteristic of a functional literacy programme is that it is geared to collective and individual needs. It is 'made to measure'; differentiated according to the environment and adjusted to specific economic and social objectives.

The advocates of traditional literacy training aim at giving the illiterate sufficient command of the mechanisms of reading, writing and elementary arithmetic to afford him access to the written or printed word. In a functional literacy programme, on the other hand, instruction in reading and writing and the training component (technical, occupational, scientific, socio-economic, civic, etc.) are not conducted separately nor dissociated in time; they are integrated activities, each entering intimately into the other.

Traditional literacy work is diffuse and non-intensive in character. Functional literacy uses an intensive approach as a step towards the ultimate acquisition of vocational skills and usable knowledge.

1. See *Functional Literacy as a Factor in Development*, Paris, Unesco, 1970 (International Education Year 1970, 1).

Traditional literacy programmes are generally standardized and set up on a centralized basis.

Functional literacy programmes are variable and flexible, and take the immediate objectives and specific situations into account.

These basic characteristics of functional literacy work need to be kept in mind, more particularly because of the frequency with which their application in practice falls short of their acceptance in principle.

WHY FUNCTIONAL LITERACY?

Throughout a diversity of situations, the aim of functional literacy remains basically the same: to mobilize, train and educate still insufficiently utilized manpower, to make it more productive and more useful to itself and to society.

On the plane of development, most of the Third World countries have set themselves two main objectives: industrialization and modernization of agriculture.

Industrialization requires capital, raw materials and power; it also presupposes a high level of technology, supplies of skilled labour and genuine know-how. These demands would be out of the question without qualified and specialist personnel at all levels. It is obvious that the industrialization of a country necessitates the production not only of technical personnel but also of a diversity of 'labour corps' with the required skills and know-how. Now, a country which is just embarking on the industrialization process does not at first possess workers trained for industrial production. Very often, firms are obliged to take on untrained workers newly arrived from the country districts. These workers have to adapt to factory conditions and to the ideas of output and productivity. Accustomed in their villages to work to the rhythm of natural phenomena—sun, rain, the moon's phases, the seasons—they suddenly have to adapt to the rhythm of the machine, to the exigencies of precision, exactness, punctuality and discipline, which industrial production implies. The difficulties presented by this adaptation are at the root of a great many failings which slow up production or make it costly and non-competitive. A few examples of this are frequent botches in tooling and waste of raw materials, numerous breakdowns of machines, unsatisfactory maintenance of equipment, deterioration of tools, accidents at work, large-scale absenteeism, etc. For industry to be productive, it requires workers with a diversity of levels of training according to the nature of their work. Yet, training

for industry in the Third World countries requires more than mere copies of what is given in the industrialized countries. It demands not only the acquisition of skills or know-how, but also a recasting of the modes of being and functioning. For the teachers, it is not simply a matter of teaching people a trade or a manual or clerical skill, but also of creating a new mentality, of shaping a 'professional conscience'. Industrial training includes such elements as industrial technology, industrial art, applied arithmetic, safety and hygiene, as well as elements of sociology, economics and civics, which are unlearnable without a certain level of literacy. It is at this point that functional literacy comes into the picture.

Functional literacy training is an activity aimed at the intellectual and civic training of the worker and his adaptation to the industrial environment and its technical demands. By extending the benefits of functional literacy to the greatest possible number of illiterate workers, greater over-all productivity is obtained from the individual firm; and this—be it remembered—is one of the necessary conditions for national development.

The modernization of the agricultural sector is also a priority objective in a good number of countries.

For an idea of the usefulness and, indeed, the necessity of a functional literacy operation as part of an agricultural extension campaign, let us consider the requirements for training in operations such as irrigation and the use of chemical fertilizers and insecticides, which only in appearance fall within the capabilities of any cultivator. In point of fact, the cultivator not only has to be able to read and understand the instructions concerning the products he has occasion to use; he also, and above all, must be able to calculate: to reckon the amount of seed needed for his fields, the volume of water required for optimum plant growth; to work out, from the proportions indicated per hectare or per acre, the amount of fertilizer required for a given area of ground, or to calculate the quantity of insecticides to be mixed with volumes of water varying with the capacity of the spray used. In short, the agricultural worker has to be able to calculate surfaces, volumes and capacities, to use the rule of three and to work out percentages. Yet the number of peasants who are still illiterate or semi-literate remains very high, and the frequently very low levels of education are a particularly serious handicap, for they immediately block any effective possibility of sustained technical progress in the agricultural sector. It can be said that inferior levels of education and

agricultural progress are totally incompatible. In every analysis of modernization in the agricultural sector, one conclusion is the double necessity of organizing appropriate vocational training and raising the cultivators' level of general education. Functional literacy teaching takes both these objectives into consideration, with the understanding that in certain cases it can be made available to populations with partial schooling. More accurately, it is in fact a matter of equipping individuals intellectually and of helping them to a level at which their knowledge becomes usable on the technical plane.

Two major questions arise once the decision is taken to mount a functional literacy operation: first, how to work out a pedagogic strategy adapted to the over-all development strategy—in other words, how to gear the pedagogic action to the development objectives; second, how to put this strategy into effect. The two parts of the present guide will attempt to answer these two questions.

We are aiming, however, at a practical guide. The articles contained in it will therefore be abundantly illustrated with examples, models and references drawn from the actual experience of the functional literacy projects, whether completed or still in progress. These documents appear as appendixes to the chapters they are meant to complement or clarify.

Part One

Determination of a pedagogical strategy adapted to the aims of a development programme

The effectiveness of a functional literacy operation depends very much on its adjustment to the development objectives and problems of the social and economic *milieu* in which it is to take place.

The preliminary definition of an operational strategy in the light of this basic requirement therefore constitutes the crucial phase of any functional literacy action.

Chapters 1, 2 and 3 are devoted to this important problem.

Chapter 1

Preliminary inventory of objectives and problems

PRELIMINARY INVENTORY OF THE ECONOMIC OBJECTIVES

Once the development programme scheduled for integration with a functional literacy element has been established, the first step is to ascertain the programme's general objectives.

These objectives must be clearly tabulated, as conceived and stated by the competent authorities.

The available documents will be consulted with this in mind, e.g.: general development plan; regional or local development plan; miscellaneous technical and economic studies (production standards, etc.); monographs; plans of operations, etc.

In the rare cases in which the objectives are not clearly defined, it will be necessary to make preliminary inquiries which should be directed to the national authorities connected with the development programme (ministries of agriculture, industry, planning, etc.), and to those with local responsibility for the administration and execution of the programme (heads of companies, administrators of development machinery, etc.).

The precision of the information collected varies from context to context. To the extent that the objectives determine the action to be taken and facilitate the orientation and execution of the context study, it is always useful to collect numerical data which can aid in the quantification of these objectives.

In a well-conceived and well-designed development operation, the fruit of thorough preliminary basic studies, the data available—of adequate clarity and explicitness—are of such a kind as to facilitate the identification of needs as regards training and the preparation of the teaching programmes.

On the other hand, serious difficulties are to be feared if for some reason or other a functional literacy element is introduced in a

development programme whose orientation and executory modalities are still uncertain.

PRELIMINARY INVENTORY OF THE TECHNICO-OCCUPATIONAL AND SOCIO-ECONOMIC OBJECTIVES

In order to reach the general development objectives, the competent authorities (planning bodies, technical ministries, leaders of industry, etc.) set 'contributory' technico-occupational and/or socio-economic objectives which must be met at the outset.

These objectives must be known as completely as possible, for they strictly condition the definition of both the training objectives and the functional-literacy programmes.

Table 1 illustrates the functional relations which should exist among these various objectives, the examples selected coming from functional literacy programmes integrated in development operations in course of execution in December 1970.

PRELIMINARY INVENTORY OF PROBLEMS

The collection of data required for a preliminary inventory of objectives usually serves to reveal a diversity of problems relating to the technico-occupational and socio-economic aspects of the work[1] factor: technical and occupational abilities and skills; socio-economic organization of production; economic comportments; human relations within the firm; health and hygiene at work, etc.

At this stage of data collection and contacts, obviously all that can be expected is a general view of the problems, a full understanding of which is calculated to bring out the physiognomy of a situation and to facilitate the context study.

1. The word 'work' is used here in a general sense. It designates any human activity which, within the area under consideration, contributes directly or indirectly to development.

TABLE 1. Relation between the various types of objectives

Country	Development operation	Economic objectives	Technico-occupational objectives	Socio-economic objectives
Algeria.	Promotion project for the agricultural region of Staouéli.	To increase production of commodities intended for export (citrus fruits, wines, early vegetables).	Improvement of production and marketing techniques.	Development of management by the workers.
Guinea.	*Agricultural sector* Koba region (rice).	To increase rice production.	Maintenance of irrigation canals. Selection of seeds. Improvement of rice harvesting and processing techniques.	
	Sifra (agro-industrial pineapple producers).	To raise the production of pineapples from 5,000 tons in 1968–69 to 60,000 tons in 1975, which will represent the total production of Guinea. To increase exports (fresh and tinned food), so as to reach a turn-over of 5,000 million Guinea francs in 1975.	Improvement of cultivation techniques: Treating of pineapple plants. Weeding. Fertilizers. Hormone treatments. Harvesting and selection of shoots.	

Country	Development operation	Economic objectives	Technico-occupational objectives	Socio-economic objectives
	Industrial sector NSAP (Nouvelle Société Africaine des Plastiques) factory.	To reach the following production figures: 350,000 waterproofs per year. 750,000 pairs of sandals. 60 tons of polythene for packaging. To diversify production (piping, plastic sheets, strips, etc.).	Improvement of technical knowledge. Machine operating. Use of security devices. Maintenance of machinery. Works first-aid and hygiene.	Socio-economic education.
India.	HYP (High Yielding Varieties Programme).	To quadruple the production of food crops (maize, wheat). *Wheat.* To raise the present production of 10–15 maunds[1] per acre to 50 maunds per acre.	Trial and popularization of high-yielding varieties. Improvement of agricultural techniques (sowing, irrigation, fertilization, plant-disease prevention).	
Madagascar.	Agricultural development operation for Befandriana-Mandritsara.	*Rice.* To increase rice production by 50 per cent in thirteen years, starting from 1968. *Ground-nuts.* To increase	*Rice.* Water management (micro-hydraulic); introduction of planting-out techniques; weeding;	Development of the Crédit Agricole. Development of multi-purpose peasant organizations and

1. One maund equals approximately 38 kg.

		the cultivable area from 50 hectares (1969) to 200 hectares (1970). *Animal husbandry.* To increase the exploitation rate by 12 per cent in four years (1969).	establishment of a cropping calendar. *Ground-nuts.* Cultivation by animal power; rotation of crops; introduction of a new variety. *Animal husbandry.* Health precautions; improvement of natural pastures; establishment of fodder reserves.	groupings for economic purposes (production, marketing, credit).
Mali.	*Agricultural sector* Cotton. Ground-nuts. Rice. Tomatoes.	Increase of production.	Improvement of farming techniques.	Hygiene at work and health education.
Syrian Arab Republic.	Integrated development project for the Ghab Valley (5,000 hectares).	To raise agricultural production from £(S)57 million in 1965 to £(S)85 million in 1970 and £(S)115 million in 1975.	Intensive experimentation: Improvement of crop varieties. Introduction of new varieties (wheat, sugar-beet, cotton, etc.). Introduction of new techniques (irrigation, fertilization).	Agrarian reform. Development of co-operatives.

Chapter 2

Context study

The preliminary inventory of objectives and problems constitutes an introduction to an exploratory analysis of the context, whose main objective is the definition of a strategy of educational intervention.

WHAT IS THE 'CONTEXT'?

It is first of all the geographical *milieu*, i.e. the combination of natural factors which set the lines of economic and social development.

It is above all the human *milieu* with its demographic characteristics and its sociological, psychological and cultural aspects; in this case, the dynamic human elements (engineers, technicians, peasants, workers, educators, etc.) participating in one way or another in the development process.

It is, finally, the economic *milieu*, in which scientific-technological factors are brought into play, serving towards transformation of the context itself. Economic action and productive activities being closely tied up with individual psychologies and mentalities, a socio-economic and socio-psychological analysis of the *milieu* is obviously indispensable in every case.

HOW SHOULD ONE TACKLE THE MILIEU?

Whatever survey method is chosen, the mode of penetration into the socio-occupational *milieu* closely conditions the results expected from the survey.

The concept of functional literacy training is new and difficult to grasp. It can be applied effectively only with the participation of the *milieu*—heads of firms, executives, technicians, illiterate workers.[1]

1. See Chapter 3, below.

It is necessary for the *milieu* to know exactly what is in question, and to understand the objectives of the projected action, plus the methods likely to be employed. In order to avoid mistakes or questionable diagnoses, it is desirable to inform the *milieu* in objective and concrete terms about the nature and objectives of functional literacy, and about the object of the given survey. To this end, the investigations must be furnished with the appropriate information in order to make themselves heard and understood. If well employed, the audio-visual media, with the impact inherent in them, can render notable service in approaching the problem. A film or a good audio-visual demonstration is more easily understood than a long talk. This is the more important in that, during this crucial preliminary phase, one is concerned with creating an atmosphere of confidence and establishing a dialogue and communication.

In order to avoid suspicion and reserve, it is essential to respect the habits, customs and representations of the populations concerned. In launching the dialogue it is often useful to take advantage, thanks to audio-visual media, of the detour afforded by outside experience in order to pose the problem in striking and expressive terms, facilitate understanding of it and promote discussion and reflection. If the briefing session is well conducted, the approach to the facts and experience of the hearer's own *milieu* is easily effected by a natural process of comparison, association and transposition.

The emergence of a clear awareness among those concerned of the true dimensions of the training problems facing them (technical, economic, educational), in itself transforms the situation and constitutes a favourable factor for the 'sounding' of the *milieu*.

SURVEY METHODS

As regards the survey methods to be used, the approach proposed in the pages which follow is only indicative in nature. The 'terrain' itself must suggest the method to be used to identify needs and problems in terms of pedagogic action.

The experience acquired in the functional literacy projects in progress, and in the training seminars whose organization they make necessary, clearly demonstrates the usefulness of moving step by step to a 'diagnosis', of making a clinical approach which seeks to identify objectives, needs and problems as precisely as possible, and of identifying positive and negative socio-psychological and socio-cultural elements.

The necessity of a precise diagnosis, with a view to functional adaptation of training action to the exigencies of a *milieu* in the process of transformation, implies a study of that *milieu* by two fundamental, concentric approaches, simultaneously or seriatim according to the circumstances: the 'monographing' and the 'radiography' of the *milieu*.

The essential purpose of the monographic study is to describe the development area and activities to show the problem range and strategy.

The 'radiographic' study uses the data thus collected to identify the problem/situations directly affecting development, both on the group and on the individual level. This stage normally issues in an identification of the training needs and a determination of the programme elements.

A. Monograph of the environment

The monograph of the environment might be constructed in conformity with the skeleton given below. As each situation presents an individual and original character, it may seem arbitrary to prepare a framework for the investigative study which is thereby exposed to the risk of running up against the disadvantages of a rigid structure.

For this reason, it should be stressed that this skeleton is only given as an indication, and that the formal aspects of the monographic approach must not allow its object and the spirit of the project to be forgotten.

The following are a few chapter-headings which would seem important.

AGRICULTURAL MILIEU

The natural setting

The human milieu. The settlement of the area and its demographic characteristics. Living conditions. Cultural aspects. Linguistic aspects. Administrative structures. Educational factors: educational and training institutions and activities.

Socio-economic milieu. The development programme. Economic factors and modes of production. The development mechanisms and their activities. Transport facilities and exchanges. Inventory of needs and resources. Unemployment and underemployment The socio-cultural and psycho-sociological aspects of the *milieu*. The training of the labour force. Illiteracy and the motivations for welcoming functional literacy training.

See Document 1, page 31

Synthesis

Formulation of the problem complex presented by the development of the *milieu*. Statement of the economic objectives. Statement of the technico-occupational and socio-economic objectives. Socio-cultural and psycho-sociological elements—positive and negative. Motivations, attitudes.

INDUSTRIAL MILIEU

The *sector of industry* to which the firm belongs. Its place in the national industrialization effort.

The firm. Status of the firm. The manufacturing operation (raw materials; products manufactured, destination; manufacturing process—over-all view). The labour force (socio-occupational structure; social particulars; cultural particulars). Size of the firm (its production capacity; its integration in the local and national system of production). The problem aspects of this *milieu* (the firm's needs and resources; problem of labour force capacitation; illiteracy; psycho-sociological factors: human relations within the firm).

Synthesis. Formulation of the problem complex presented by the development of the firm. Statement of production objectives. Statement of technico-occupational and socio-economic objectives. Positive and negative psycho-sociological and socio-cultural elements. Motivations, attitudes, human relations.

B. The 'radiographic' study of the *milieu*

The *milieu* having been 'monographed', the final phase of the 'sounding' process should have as its principal objective the restatement of the 'operational' objectives in terms of problems and needs as regards training.

The level at which the investigation is conducted should be essentially that of the groups and that of the individual—whose intellectual profile and knowledge demand understanding for the purpose of determining his needs as regards training.

INTELLECTUAL PROFILE OF THE ILLITERATE ADULT

Research into the psychology of the illiterate adult has still to be undertaken and encouraged. In effect, we have here a still-unexplored domain, but one of exceptional richness, if we consider the variety of socio-cultural situations and of individual experience.

In this domain, we have no established scientific data, such as we have in the area of child and adolescent psychology. The rare studies made are still of an inconclusive character, and the fragmentary conclusions which they yield would be the better for fuller research. These conclusions are nevertheless of undoubted interest for the pedagogical action which, in turn, can clarify and amplify them. Document 2, extracted from a study carried out among the peasants of Farafangana is relevant to all functional literacy action in the country,[1] and—beyond that experience—may provide suggestions for similar studies respecting the action to be taken.

See Document 2, page 36

DETERMINATION OF TRAINING NEEDS

A determination of training needs involves two approaches which are in fact complementary: objectives-oriented approach and problems-oriented approach.

For didactic reasons, these two approaches will here be presented separately. In practice, and according to the circumstances, their combined use is essential.

1. See *Functional Literacy: Method of Training for Development*, p. 13 (Unesco document ED/Conf.26/3, 6 November 1970).

If the educational programmes for adults were required to conform to individual objects or aspirations, their adaptation to existing conditions and real needs would be imperfect. It is necessary to take into consideration the problems which prevent the attainment of the desired aims. It goes without saying that the problems of a subjective character, having to do with individuals, groups or collectivities, are much more varied than the objective problems; but they are also closer to life and real circumstances. It is for this reason that their identification constitutes a decisive step towards the determination of training requirements and the adaptation of educational programmes to a given *milieu*.

Objectives-oriented approach

In industrial and agricultural areas alike, the determination of programme elements can issue from a preliminary restatement of developmental objectives (technico-occupational and socio-economic) in terms of training requirements.

To this end, use can be made of job-analysis methods, in the wide sense of tasks, roles and functions, within the socio-economic activities of a dynamic *milieu*: workshop, work-site, agricultural holding, co-operative, etc.

A job-study is necessarily multidisciplinary in character, since it requires the co-operation of a range of specialists: technicians, sociologists, educators, etc., with the composition of the teams varying according to the nature of the job under consideration.

Job-study in an agricultural milieu. This study is directed, on the one hand, to the actual knowledge of the populations under consideration and, on the other, to the knowledge required. The latter is established on the basis of the technico-occupational and socio-economic objectives of the development programme.

The comparison between these two levels of knowledge permits a listing of needs as regards training.

See Document 3, page 40

Regarding translation of the technical-occupational objectives into tasks and operations (definition of situation to be achieved), the objectives must be seen in terms of operations to be carried out and roles to be undertaken at the level of each task.

Determination of the level of knowledge of the population and of needs as regards training can be tackled in several different ways:

Direct observation. This means going to the area to observe and interview the workers and the technicians supervising them. This method gives excellent results, but is long and therefore expensive.

Sounding the specialists. The specialists of the development team (engineers, agronomists, technicians, administrative staff) responsible for following and implementing the technical programmes in the field are often in a position to provide the necessary information concerning the level of knowledge of the populations under consideration.

Inquiry by questionnaire. The workers and specialists are asked to reply to a questionnaire regarding the different technical operations carried out in the course of the cultivation cycle. After analysis of the results, it is possible to determine the level of knowledge of those concerned.

The three approaches indicated above are generally susceptible to a diversity of combinations, according to local possibilities and opportunities.

Whatever approach or combination of approaches is used, it should be possible to identify the level of knowledge of the population under consideration for each task and for the corresponding operations (initial state).

The individual operations and tasks necessitated where 'deficiencies' are found to affect the majority of the population constitute the situations from which the elements of the programme will be determined.

See Documents 4–5, pages 41–5

Job-analysis in an industrial milieu. Here, the methodological approach is the same as in the case of an agricultural *milieu*.

Two situations may be distinguished, according to the objectives in view: training for a job in industry, generally given in the form of basic vocational training; and on-the-job retraining or vocational training proper.

Training for a job in industry. The need to train a skilled labour force in short order to meet the needs of industrial concerns leads the authorities concerned to organize basic training for workers, either full-time in vocational basic-training centres, in alternation with productive work, or during or after working hours.

The situation is particularly favourable to training in the first two cases. In the first, we get the normal situation of a technical and vocational training establishment where the main pedagogical problem

is that of adapting the training to the aptitudes of the illiterate students. In the second, the training problem is directly linked to productive activities. However, the alternation work and functional literacy training is particularly favourable to the training activities.

See Document 6, page 46

On-the-job training and retraining. Job-analyses, whether by direct observation, by samplings and a documentary study, or by an approach combining several different methods, should make it possible to draw up a list of the training needs which will provide the basis for drafting the programmes.

Problems-oriented approach

In the pursuit of given objectives, fixed problems arise as soon as various obstacles diverse in nature block the advance towards the objects chosen. These obstacles are essentially concerned with individuals' skills and attitudes, and with human relations.

Identification of the problems. The detection of problem situations is undertaken as soon as the preliminary enumeration of problems has been made.[1] This process must be pursued by a systematic exploration of the field of operations by: (a) direct observation; (b) consultation of experts and the population elements involved; (c) documentary analysis.

In both agricultural and industrial circles, the analysis of the technico-economic situation, considered as a preliminary to functional literacy operations, must always be rounded off by a study of the problems arising in the context of human relations within the groups and of attitudes towards work, development and functional literacy.

Industrial psychology shows the importance of the working 'atmosphere'. The fact is that the productivity of an individual is determined both by his capacities and by his state of mind.

By reason of their affective content, attitudes influence behaviour. It is therefore necessary to study them, both at supervisory and at operative level, so that the training effort may be directed concurrently with the acquisition of knowledge to that of constructive attitudes.

See Documents 7–8, pages 48–51

The examples given in Documents 7 and 8 are good illustrations of the problems-oriented approach.

1. See Chapter 1, above.

Translation of the problems into training needs. The problems identified represent the 'deficiencies' of individuals or groups, and supply, item for item, the list of the corresponding needs as regards training.

Combined use of the two approaches

In most situations the objectives-oriented approach and the problems-oriented approach can be combined.

Certain problems, relating in particular to the skill of individuals, can be tackled by the job-analysis method. Conversely, job-analysis may reveal the existence of subjacent problems, which may have to be taken into consideration (see Fig. 1).

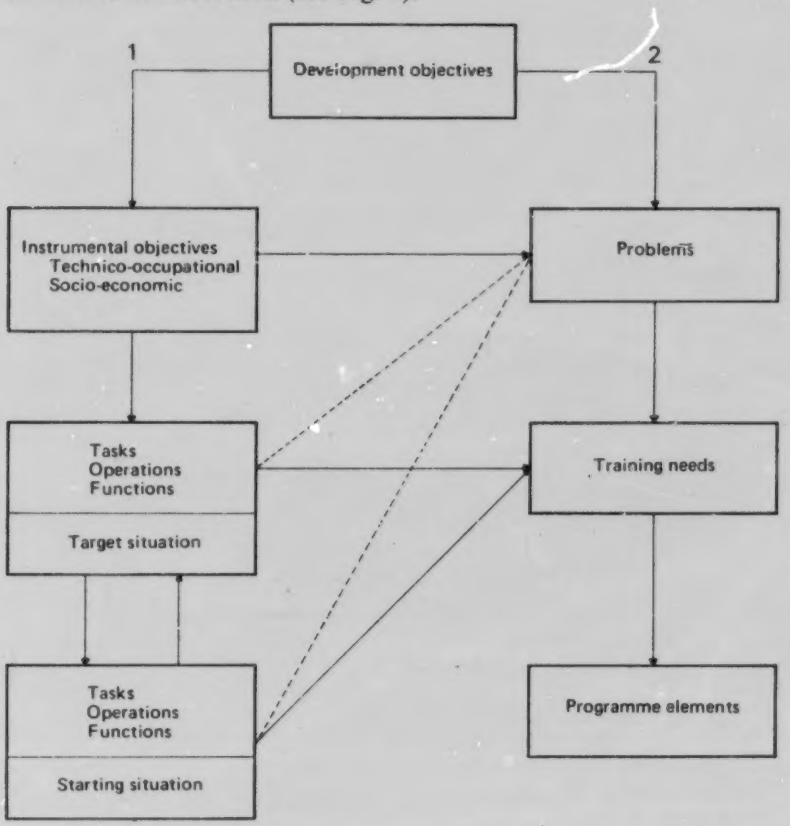

Figure 1. Objectives-oriented (1) and problems-oriented (2) approaches.

LITERACY—A MAJOR NEED

Functional literacy is a method of training for development. It must never be forgotten that literacy represents one of the fundamental elements in such training.

It is unnecessary to recall the importance of mastery of the alphabet as a means of communication. The fact that the written sign is one of the essential conditions of progress is a datum of modern life. In effect, the written word constitutes at once a permanent working instrument and a 'memory bank' containing all the knowledge needed for action and for individual and collective development.[1]

In order to make the most profitable use of the capacity for action which the ability to read and write provides, the main effort should be directed to a definition of the most motivative educational situations, i.e. those which are the most directly related to individual and collective needs, those most closely tied in with the development objectives.

Accordingly, it is impossible to overstate the importance attached to the study of the *milieu*, which alone will make it possible to elaborate functional programmes corresponding to needs and expectations. Literacy is only really functional in the context of a training dynamic, and to the extent that it conveys a technical, vocational, social and economic content related to development requirements.

All the work of studying the terrain, defining the ranges of problems, and elaborating the programmes and strategies, must be able to ensure the effectiveness of the training and hence of the pure literacy instruction which is an integral part of it.[2]

1. See Introduction, above.
2. See Chapter 6, below.

Document 1

Functional Literacy Project (Madagascar) Befandriana Operation Motivations of the peasantry for or against functional literacy training

AIMS AND LIMITS OF THE STUDY

This study of peasant motivations for or against development and literacy training has been taken from the results of a survey which covered twenty villages of all sizes situated in the zone of the Farafangana (Madagascar) subproject.

PRESENTATION OF THE SURVEY

The survey was carried out by eight voluntary-service workers who were accompanied by two young women (one the directress of a rural extension centre, and the other of a domestic and women's agricultural training centre).

Meetings were thrown open for general discussion after an announcement by the investigator: 'We know that you have asked for someone to come and teach you, but we don't know what you want to learn. You can help us by telling us what you would like to learn.' The investigators—two in number each time—took occasional discreet notes, and met afterwards to fill out the forms, since the peasants, usually untrusting by nature, would have given no information if they had seen notes being taken of what they were saying. As a result, much detail was undoubtedly lost. It was not possible to use tape recorders, as the peasants were too apprehensive.

The team managed to hold forty-six meetings (fifteen for men, twelve for women, eight for persons of authority, and eleven for young people of either sex) with a total attendance of 893, of whom 30 per cent were young people, 12 per cent women, 30 per cent men and 9 per cent persons of authority. When the latter were not able to attend separate sessions, they joined in the meetings for men.

WHY DO PEASANTS WANT TO LEARN TO READ AND WRITE?

Peasants wanted to learn to read everything readable so as not to be 'ignorant of the evolution of modern life', so as not to be 'cheated by traders' who knew how to read, and finally, 'to be like the chaps of Farafangana'. Those in authority wanted to learn to read 'in order to organize village affairs better'.

They first wanted to read family letters (17 per cent of the total of 'wants', manifested at thirty-nine meetings out of forty-six).

After family letters, it was books in general and agricultural brochures in particular, which attracted the peasants (32 per cent of the reading choices, 16 per cent for each item in 80 per cent of the meetings).

Next came newspapers, instanced by all the young people, almost all those in authority, one-third of the women and three-quarters of the men.

Peasants also wanted to be able to read official letters (11 per cent of votes, one meeting out of two) and the 'stuff from the town hall' (10 per cent of votes, one meeting out of two).

It therefore emerges that the peasants want to learn to read in order to keep in touch with the young people who have gone abroad, to keep a check on the action of the administration, and to get technical knowledge from books. The young people and the leading personalities are the groups with the most motivation.

WRITING

In the course of the forty-six meetings, 107 replies were obtained to the question 'You want to learn to write; what do you want to write?'. Fifty-five per cent of the replies indicated a letter, 40 per cent a desire to write the names of people or of things.

An average of approximately two replies per meeting was obtained, which is very low. It was the young people who expressed the most 'wants' (average of 3.3 replies per meeting), the men had an average of 2.3 per meeting (2.4 for the persons of authority), and the women, 1.3 per meeting.

Two-thirds of the replies from the men (including the persons of authority) expressed desires to write a letter 'to the family, and to our sons far away', but also 'to friends, to those we love'. In the case of five meetings, answerers wanted to write 'administrative letters to the Agricultural Department' and, in one village specifically, 'to ask the Prefect for assegais to kill the wild boars'.

About one-third of the replies indicated that peasants wanted to learn to write so as to be able to sign their names, to avoid the humiliation of finger-printing, to write the names of their villages, while there were a few who wanted to know how to 'write the date and their age'. A motive advanced at one meeting was to be able to write a 'work plan', and at another, 'to list our property'.

TOTTING UP AND CALCULATING—ANALYSIS OF REPLIES

This item produced many replies, about eight per meeting. The figure was eight per meeting for the persons of authority, the men and the young people, and a little under seven for the women. Twenty-three per cent of the replies referred to totting up; people wanted to calculate their possessions. Next, 17 per cent instanced working out prices, followed by calculating weights (13 per cent), volumes and capacities (13 per cent), surface areas (11 per cent), lengths and distances (11 per cent), times (8 per cent), and lastly, of certain relationships (3 per cent).

Arranging the wants cited by each of the groups assembled in order of the support they received, the following differences are observable.

Among the men, totting up and calculating prices come first (an average of 1.5 replies per meeting); then, calculating lengths and distances, surface areas, weights, volumes and capacities (about one reply per meeting); and last, calculating times and relationships.

Among the women, the leading want was addition (3.5 replies per meeting); followed by calculating prices, weights and capacities (a little under one reply per meeting); and finally, a long way behind, calculating lengths, distances, surface areas and times (about 0.5 replies per meeting).

Of the wants of those in authority, by numbers of replies received, the ability to add was first (2.2), followed in descending order by ability to calculate (a) prices and weights (1.7), (b) capacities, surface areas, and lengths (about one reply per meeting), and finally (c) times and relationships.

The young people's wants were, first, to learn to reckon prices (1.7) and to add (1.6); followed in order by learning to calculate surface areas, capacities, weights, volumes and times (about one reply); and finally, relationships (0.2).

Given that the peasants want to learn how to tot up and calculate, for what purposes do they want this?

Addition

The wish most frequently expressed was to learn to add up money earned, since the peasants are never sure of receiving their due when they sell their agricultural produce. This wish came mainly from the adults—men and women. Next in frequency was the wish to learn to tot up livestock (mainly cattle and poultry); it was the men, young and old (not the women) who wanted this. The least frequent wish expressed was to be able to make enumerations of everything relevant to agricultural production: *soubiques* (baskets) of rice and coffee, numbers of coffee bushes, mats woven, etc. It was the women who were most keen on learning to add and, surprisingly, the young people who were least keen. (Perhaps they already knew how?)

Calculation

The primary wish was to learn to calculate prices and, first and foremost, the value of produce: 90 per cent of the answers specified 'the total price of the goods or produce we buy or sell, so as not to lose money'. Many answers specified products whose prices are subject to evaluation: rice, cotton, pepper, vanilla, and rush matting ('ordinary and coloured').

Other subjects (especially women) wanted to learn to calculate the price of manufactured articles: pillows, poufs, clothes, dresses, curtains.

Next came the desire to learn to calculate weights, in most cases, of local produce (84 per cent of those giving this answer): first coffee, then paddy, pepper and straw. Others wanted to know how weighing is done mechanically, others, the relationship or difference between one kilo and one *kapoaka*[1] of coffee, or the weight in kilos of a *daba*.[2]

Next in order of frequency was the wish to learn how to calculate volumes and, above all, dry and liquid measures. Eighty-three per cent of these replies mentioned accurate calculation of dry-measure volumes of their agricultural produce: coffee, paddy, pepper and manioc. Of equal interest were the calculation of space in granaries or houses, and the dry-measure quantity of rice consumed by the family. (The peasants think in terms of dry measures rather than of weight, especially for subsistence produce.) The indications are that here and there people do have the notion of the relationship of different units (total volume of the coffee they reckon in *kapoaka*, volume of manioc after fine chopping, the capacity of a jar, etc.).

As regards calculations, in descending order of interest to peasants are the assessments of areas, lengths and distances: 83 per cent of this group wanted to learn to calculate the areas of rice fields, coffee plantations and cultivable fields. A few men wanted to learn to work out floor space in houses, and a few women the area of rush mats.

As to distances, most wanted to learn to calculate the distance between villages or between villages and traders, and the main lengths of fields and rice paddies (men) and of rush matting and dress materials (women).

Eight per cent of the total of wishes expressed related to the calculation of time. The wish most frequently expressed was for information on the notion of time and the workings of the watch. Next came the desire to learn how to measure the time taken on the journey to a neighbouring village or to the trader's store. Other wishes expressed were to learn how to calculate the drying time for coffee and paddy, the time to be allowed between sowing and planting out, etc.; in short, everything relating to the agricultural calendar.

WHAT PEASANTS WANT TO LEARN IN ADDITION TO WRITING AND ARITHMETIC

Learning something else

The question put to the peasants was: 'Apart from reading, writing and arithmetic, what more do you want to be taught?' A total of 624 replies were obtained, of which 29 per cent came from men's meetings, 28 per cent from the young people, 23 per cent from the women and 19 per cent from the local leaders. If we take into account the number of meetings held by each of these social groups, we find that it was the young people's meetings which proffered the most suggestions (16 on average), followed by the men's and women's meetings running level with an average of 12.5 per meeting.

An attempt has been made to regroup the requests under the following heads:

Request for knowledge of direct occupational relevance (improvement of cultivation techniques, animal husbandry, preservation of produce marketing); 28 per cent of all wishes expressed.

Requests for knowledge relating more particularly to means of production (rural trades, rural engineering): 13 per cent of all requests. Requests for occupationally essential academic

1. Measure of capacity corresponding to a Nestlé's condensed-milk tin.
2. Measure of capacity corresponding to an 18-litre petrol can.

knowledge (weights, measures, relationships): 25 per cent of all requests.

Requests for knowledge relevant to the care or improvement of the labour force (health, hygiene, food, clothing): 13 per cent of all requests.

Requests for knowledge relevant to relations with the outside world (knowledge of the laws of nature, communication with others, relations with authorities, general knowledge): 21 per cent of total requests.

We thus see that the acquiring of skills such as weighing, measuring, calculating proportions, relationship and percentages, are a main preoccupation of the peasants, since they appear four times (once for each social group) on the list of the first ten. The primary interest lies in weighing things (half the requests related to this). Generally speaking, subjects wanted to know the weight of their produce before marketing it. They wanted to know the weight of the traditional village measures (*daba, kapoaka*) of each product. They also wanted to learn the use of scales, to be able to weigh things for themselves. A few subjects also expressed a wish to learn to weigh seed in order to avoid wasting it.

In the same line of thought was the desire to learn to measure—calculate distances, areas of rice paddies and seed-beds, the dimensions of houses, and of the *rapaka* (stakes) used in building. But they also wanted to be able to use the measuring tape, as done by the development agents.

Lastly, subjects wanted to know how to calculate the 'right quantities' of fertilizers, insecticides and seeds which should be used on a field according to area 'like the FAO agents'; and how to work out the amount of rice which should be retained for their own consumption and the amount of surplus which can be sold. Finally, the women were concerned with medicines and wanted to learn how to give the doses prescribed by the doctors.

Occupational knowledge

Here the wants expressed can be divided into four, almost equal groups.

The first want is to learn how to improve farming techniques, run tractor-drawn ploughs (in order to work more land), improve rice-growing (seed-beds, drilling the seedlings), use of insecticides and fertilizers, maintenance of coffee and pepper plantations, improvement of manioc cultivation, vegetable and tree-fruit growing, and cultivation of other crops which do not yet exist in the village.

The men were interested in cattle. Some of them wanted to make theirs a stock-farming region. Accordingly, they wanted to learn how to fatten the cattle, how to extend the area of improved pasture and how to pick out their separate draught oxen from beef cattle. Advice was requested on the breeding of pedigree stock. A few expressed interest in pisciculture.

Peasants remarked that produce kept in store was often damaged, either by insects or by rats. They accordingly wanted to know how to preserve the full quality of the stored harvests (paddy, rice, manioc). They also wanted to be taught better ways of choosing seed for the next year, and of drying coffee and pepper. Many thought that if they learned how to preserve their produce better, the period of short supply would be briefer and famine more easily avoided.

The problems of marketing were also of interest to each of the four groups interviewed, above all to the leaders and the young people, although the women were not indifferent to these concerns. There was a general wish to know how to sell at the best price. The peasants were indignant that prices dropped when their production increased. They remarked that the over-all profit was not proportionate to the quantities marketed, and wanted to learn how the total cost is calculated from the selling price per *soubique* or *kapoaka*. They wanted to know the price of their produce (coffee, pepper, rice or paddy) in advance. In sum, they sensed the economic phenomena associated with marketing, did not accept the structure and wanted enlightenment. They thought that literacy teaching would arm them (with arithmetic, knowledge of weights and measures and of the asking price) to meet traders on equal terms.

As regards the improvement of the means of production, the requests for instruction covered

water management, disposal of produce for sale, improvement of the habitat and storage facilities, and the development of the rural trades sector. Thirty-six per cent of the requests related to the water problem. Subjects wanted, with the help of the 'technical services', to build dams, improve the maintenance of the canals, irrigate and drain the paddy fields according to the rules, and operate pumps.

There was also a wish to learn the laws of nature. Subjects wanted to know: the causes of thunder and drought; why the wind blows; why the sun despite its heat does not dry coffee instantaneously; why water cannot be stored in areas of the plain where there is none available; what water is used for apart from drinking and washing; why there is a particular time of the year for planting crops; why aeroplanes fly; and if it is not true that there is, after all, a little man inside the radio. They were anxious to know how to take notes, so as to write all this down. For when an instructor did come, they quickly forgot the explanations he gave. They wanted to enrich their knowledge in order to discuss it together in the evening.

Document 2

Functional Literacy Project (Madagascar)
Intellectual profile of the Malagasy peasant

The illiterate peasant is generally characterized in terms of his inability to read or write (or—as is too often forgotten—add or calculate). This definition, however, is absolutely inadequate for distinguishing him from the literate. The latter moves fast and far and lives in a world inundated by the written word, images, drawings, sketches, diagrams, posters, films, television—all of it to an accompaniment of increasingly symbolic noises, cries or music, which underscores the written or represented element. These assaults on eye and ear permanently modify the action of the literate, operate in depth on his sensations and impregnate his sensibility.

The illiterate peasant moves around much less, and seldom rapidly; he lives in a fairly ill-defined spatial structure and in an environment generally devoid of man-made symbols, whether graphic or acoustic. This non-technicized environment does little to modify his sensations and sensibility, or else does it less rapidly.

The illiterate cannot compensate for the lack of knowledge resulting from his inability to interpret the written symbol by over-exceptional development of other intellectual faculties as in the case of some physically handicapped people who compensate for the lack of one sensory faculty (e.g. sight) by an astonishing development of other senses (e.g. hearing and touch). The illiterate's comportment is more that of a mentally handicapped person.

INABILITY TO INTERPRET PICTURES

One important characteristic of the illiterate peasant is the difficulty which he has in understanding a picture, which he does not see as a representation of reality but as an object in itself. Therefore, he will not necessarily say what the picture represents, but what this collection of lines suggest to him. One might point out that pictorial material is wholly lacking to most school-less hamlets, and that there is practically no paper, either printed or blank.

Researchers were able to conduct an inquiry on this point in 1969, in villages in the sub-project zone. A three-plate pictorial test was used (see page 37).

The first plate showed everyday objects with which the villagers were familiar, represented without unnecessary details. The second plate introduced the notion of perspective, while the third showed parts of objects or much enlarged objects. All the objects represented belonged to the visual world of the peasant.

If we examine the results of the test we first find that in general the men recognized the objects pictured better than the women, but with only a small difference between them, except among people over 45 years of age (the difference then becomes very marked). Although two men out of three (against 61 per cent of the women) recognized the eight pictures on the first plate, we find that the eight pictures on the second plate were only recognized by a quarter of the men (against 23 per cent of the women), and those on the third plate (parts of objects) by no more than 11 per cent of the men and 8 per cent of the women.

The distribution of right answers by age groups shows that the younger subjects (as a result of schooling) better indentified the items pictured

Plate 1

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Plate 2

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Plate 3

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than did the older subjects. Finally, it will be noted that while all the men recognized at least one picture in the last two plates, nearly 20 per cent of the women aged 45 recognized none at all. From this it is possible to conclude that the ability to see a picture as a representation of reality is completely absent among women aged 45.

We thus find that the peasantry have never been taught to 'see' pictures, any more than they have been taught to read and calculate. If an illiterate is asked to 'describe' the drawing in front of him, the results obtained are very variable; being incapable of analysing the picture, his answer is suggested to him either by the general look of the drawing or by some detail of no particular importance in terms of the drawing's structure. By way of illustration, there follow a few of the villagers' interpretations of some of the pictures:

Picture 17 (bicycle-wheel): watch, moon, star, cart-wheel, umbrella, bowl.

Picture 10 (back view of a zebu): cooking-pot, shovel, tree-stump, fish, material, tree-trunk, coffee-pot, jug, skeleton, horse, insect, man working, snake.

Picture 23 (man's ear): machete, snake, cooking-pot, rope, brain, penknife, parrot, mouth, pig, fish-hook, eel, intestine, embroidery, child in its mother's womb.

The variety of the replies is a good indication of the difficulty in the thought-processes of the illiterate of proceeding from the real to the figured, and from the representation of an object to the real object. This image blindness is, however, easily curable.

Non-technical mentality of the peasant

One essential difference between the illiterate peasant and the townsman is the peasant's non-technical mentality. The town-dweller of today lives in a technical world proceeding from nature's physical laws. He has at his disposal a quantity of machines—slaves whose strength is reckoned in horsepower or kilowatt hours.

The non-technical mentality would seem to be created by the illiterate peasant's lack of habituation to technical values: he is a man of the primary sector which has been little touched by technical progress. He is rarely confronted with the laws of mechanics, physics or electricity; statistics drawn up in 1969 for agricultural equipment held by peasants in the Farafangana district showed 137 carts, 113 ploughs, 11 harrows, but no tractors or rollers.

Lack of precision in using measures

Another point distinguishing the illiterate from the modern man is a lack of meticulousness, of precision in measuring length, area, weight and, above all, time. The illiterate peasant never needs to know the exact measurements of things and has never heard of degrees centigrade, millimetres or seconds. His units of measurement are subjective, not objective. Time is measured in terms of sunrise and sunset. The unit for distances is the pace; for weight, content and production (the three notions are not clearly differentiated in his mind) the unit is the rice basket. Verticality, horizontality and parallelism are never absolutely exact in the peasant's mind: he settles for 'near enough', which, indeed, is all he needs. For the measures of length in particular, the peasant has never adopted a fixed unit. He measures by comparison—either 'more than' or 'less than'—utilizing 'anatomical' lengths according to standards provided by his own body which, of course, varies with the individual.

For measuring capacity he uses the *kapoaka*, the *sobika* (*soubique*) in natural fibre, with a capacity that varies greatly according to the region, and the *daba*. These measures are convertible into weights in the course of trading transactions with outsiders. It is hardly necessary to point out the cheating which can occur as a result of these practices.

Difficulty over mental detachment from the real

The peasant's thinking is above all pragmatic; it is always 'founded in the real world'. When the peasant makes a comparison it is always by reference to the concrete world in which his daily life is lived. He generally thinks in images—in juxtapositions or seriations determined by prox-

imity, resemblances or differences--and rarely if ever inductively or deductively. He thinks in images and not in concepts; and thinking in images is heavy, awkward to handle, uncommonly slow and therefore limited.

Difficulty in conceptualization

A consequence of the difficulties which arise from the fact that the peasant only thinks in concrete images will be the arrest, through lack of practice, of the capacity to develop his judgement and his powers of reasoning, analysis and synthesis—and hence of his potential for creativity. The act is never more than the reproduction of another act already repeated previously. The transfer of an acquisition in one domain is not carried out systematically for application in another domain. A principal act is not, in the peasant's thinking, purged of all the associated details which must precede or follow the principal act for that act to take place. The villager cannot isolate the act and give it a preferential value in order to compare it with another act, also isolated. For him, everything is on an equal footing, all the associated details must be recapitulated, and all present the same interest. Hence the difficulty he has in learning new cultural ways.

Thus the illiterate peasant's thought is concrete thought formed of concrete images. Yet the modern world is a world loaded with symbols, a high-speed world where meaningful thought must be stated with clarity and concision. Moreover, modern thought is often allusive and elliptical.

The changeover from the illiterate to the literate state is not a mere evolution, an enrichment of the intellect. It is a radical mutation. The process implies not merely access to a higher level of knowledge but also a general restructuring of knowledge previously acquired, of modes of apprehension of the outside world, of forms of elaborating ideas and, in a word, behaviour as a whole. For many former illiterates, having learned to read and write has been a rediscovery of the world, a rebirth.

Document 3

Literacy Project, Ghab (Syrian Arab Republic)
Technical priorities for sugar-beet cultivation

TECHNICAL OBJECTIVES

The primordial production factor implies the securing of a sufficient number of roots per unit of surface. The preparation of the soil and the date of sowing which condition this factor are therefore of prime importance. Any delay may cause a heavy drop in production, which may reach as much as 70 per cent.

Moreover, it is absolute heresy to abandon the unirrigated cultivation method even for autumn beet.

Further provision must be made against an increase of certain vegetable parasites (especially *Cercospora*) and animal parasites (*Laphygma* and *Phterimes*). Action to combat parasites must be extremely rapid.

TRANSLATION INTO TECHNICAL OPERATIONS AND TASKS

Preparation of the soil
- Choice of soil. (Loam, mixture of sand and clay; avoid heavy clay soils.)
- Ploughing.

Sowing
- Date (15 October to early November; in the Acharneh region sowing may be around 15 February–spring beet).

Irrigation
- Autumn: 2–3 irrigations.
- Spring: 5–7 irrigations.
- Periods between irrigations: 2 weeks in Acharneh; 3 weeks in Ghab.

Diseases
- Use copper-based products.
- Choose a resistant variety of beet.

Insects
- Use HCH and DDT products.

Document 4

Functional Literacy Project, Madagascar
Befandriana Operation
List of situations in which individual 'deficiencies' have been detected

RICE

Preparation of the seed-beds (ploughing, harrowing, levelling).
Maintenance of banking.
Sowing in the seed-beds (pre-germination).
Preparation of the rice paddies (ploughing, harrowing, construction of banking).
Drilling seedlings.
Weeding (use of the rotary hoe).
Rice-grub prevention.
Second weeding.
Harvesting.
Marketing of crop.

GROUND-NUTS

Choice of ground.
Preparation of the soil (ploughing, harrowing).
Shelling of the seed nuts; fungicide treatment.
Sowing (density); anti-rosette measures.
Weeding.
Harvesting.
Marketing of crop.

STOCK-FARMING

Herding.
Storage of ground-nut tops and rice straw.
Feeding of cattle.
Care of cattle.

Document 5

Functional Literacy Pilot Project (Algeria)
Summary of the agricultural technical survey

A survey was conducted in nine self-managed farm estates: five covered by the Algiers-Sahel subproject and four by the Annaba (Bou Namoussa) subproject. This study is intended to indicate the technical needs of the workers on the self-managed farm estates included in the Algeria II project. The method adopted comprised the following stages: study of the present agricultural situation on the estates; job-analysis; preparation of a list of the technical skills needed by each group of workers to carry out its work satisfactorily; analysis of the present technical skills of each group of workers; listing of the workers' technical needs, which will serve as a basis for the list of the agricultural technical themes in the functional literacy programme.

CURRENT STATE OF THE MAIN CROPS

The study of the current state of the main crops was carried out by means of interviews with the directors, heads of management committees and a certain number of supervisory personnel working on the estates.

The main crops of the self-managed agricultural estates covered by the Algeria II project are: vines, market-garden crops, citrus fruits, cereals and fodder crops.

Vines

Wine-making vines occupy the larger part of the land under vines. The average age of the vines is 30–40 years. It is difficult to obtain precise information on the vine stocks used for each variety.

The method of fertilizing used in Algiers-Sahel consists in using 3–5 cwt of compound fertilizers (0–10–18). The fertilizers are spread on the surface or worked into the soil either by light ploughing or by hand into holes dug close to the vine stocks. Nitrogenous fertilizers are never used for the Algiers-Sahel vines. At Bou Namoussa, mineral fertilizers have not been used for vines for the past two years.

Treatment against oidium and mildew is carried out satisfactorily. Treatment for other diseases and against insects is not carried out on a wide scale.

The average yield per hectare is 50–60 quintals. The estate managements estimate that production is down by about 40 per cent in comparison with previous years. They consider that the drought and lack of appropriate technical work may be the cause of this decrease.

Market-garden crops

Potatoes, tomatoes, carrots, lettuces, onions, marrows, peas, green beans and turnips are the main vegetables produced in the two regions. At Bou Namoussa, three 'raw-material' crops—sugar-beet, cotton and tobacco—are produced as well. The market-garden crops are generally well tended. However, considerable possibilities exist for improving fertilizing and treating operations, as regards the products and methods used.

At Bou Namoussa, an effort is called for to introduce and explain the new methods of irrigation for market-garden crops as the irrigation project began to supply water to the Maz Rachir

pilot project area over a year ago. The other domains will be supplied from the irrigation project very shortly. Again, the growing of industrial crops, particularly sugar-beet, is being encouraged in this area, and the care of these crops will need to be dealt with in training programmes for the land-workers of the region.

Citrus fruits

These include tangerines, mandarin oranges, oranges, lemons and grape-fruit.

The manuring of citrus-trees includes mineral and organic dressings. The mineral fertilizers used are nitrogenous (ammonium nitrate at 33.5 per cent and 22 per cent) and are applied three times per year (in principle, in February, June and August), averaging 1 kg of pure nitrate (3 kg of ammonitrate at 33.5 per cent) per tree each time. The amount of farmyard manure used in the citrus groves varies with the species, and depends on the possibility of buying manure from the other estates.

Treatment against scale is excellently carried out, but little is done against other diseases and against insects. Pruning is generally badly done.

The average yield varies from 100 to 150 quintals per hectare. This is very much below the economically viable level for citrus-growing. It is quite possible to increase this yield by improving such operations as irrigation, manuring treatment against insects and diseases, pruning, etc. It is to be noted that the citrus yields on the Ramdani Nouar estate at Bou Namoussa is much higher, thanks to the sound management of the groves there.

Cereals

Wheat, barley and oats constitute a secondary crop in Algiers-Sahel, but hold a more important place in the Bou Namoussa region. With the prospective extension of irrigation over this region, the problems of irrigation, rotation of crops, manuring, weeding and seed selection are of great importance. They will need to be handled on different lines from those currently followed on non-irrigated land.

Fodder crops

As a result of the encouragement of cattle-raising —milkers, calves, etc.—fodder crops are now of great importance in the Bou Namoussa region. In consequence, land-workers require a whole range of new knowledge about the sowing, irrigation, cultivation and harvesting of these crops. The introduction of spray irrigation and all that it implies in the way of preparatory work about wind-breaks, the training of workers in the handling and servicing of the machinery, the amount of water to be given to each crop, etc., are also important.

Such is briefly the current agricultural situation in the self-managed estates of Algiers-Sahel and Bou Namoussa. The survey shows that the standard of work is in general fairly good, thanks to the technical instruction given by the departmental directorates of agriculture, the estate managers and a proportion of senior workers with practical experience. The disappearance of the latter may pose a serious problem. It should also be added that since yields are mostly very low, with much room for improvement in the technical operations, and since new techniques will therefore have to be introduced, there is every possibility of an increase in the over-all production of the farm estates if the technical needs of the workers can be met. The succeeding sections of the survey are devoted to indicating these needs.

JOB-ANALYSIS

The job-analyses were caried out in conjunction with the estate managers, the chairmen of the management committees and the departmental farming authorities. The results were embodied in two lists: the first giving the tasks and responsibilities assigned to each group of workers, and the second the technical operations with which the workers must be familiar in order to carry out their tasks.

PRESENT TECHNICAL SKILLS OF THE LAND - WORKERS

From the results of the job-analyses, questionnaires were prepared to investigate the technical skills of the workers, and were used on a random sample of 200, comprising 50 supervisory grades (farm unit, crop division and workshop heads) and 150 workers. The questions in the survey concerned the main operations in the farming of these self-managed estates.

The results are summarized in the accompanying table, which shows, for each main farming operation, the percentage of workers who are skilled (i.e. able to carry out the operation in question), semi-skilled and unskilled (i.e. unable to carry out the operation without being supervised down to the last detail).

Percentage classification of workers according to their skill in carrying out the main farming operations

Operation	Skilled	Semi-skilled	Unskilled	Operation	Skilled	Semi-skilled	Unskilled
Preparation of land	46	39	15	Manuring	0	12	88
Selection of good plants or seed	41	31	28	Treatment against diseases and insect pests	0	20	80
Planting or sowing	5	49	46	Irrigation	22	38	40
Grafting	2	2	96	Ploughing	20	32	48
Pruning of vines	24	36	40	Harvesting	20	80	0
Pruning of citrus- and other fruit-trees	0	2	98	Marketing	5	12	83

EXPLANATION OF RESULTS

This table shows that the percentages of workers ranking as skilled in the various farming operations vary from 0 to 24 per cent for ten operations, with percentages of 46 and 41 respectively for preparation of the land and choice of good plants or seeds. The percentages of semi-skilled workers range from 2 to 39 per cent in ten main operations, with figures of 49 per cent for planting or sowing and 80 per cent for harvesting. The percentages of unskilled workers vary from 40 to 98 per cent for nine main operations, with figures of 0 per cent for harvesting, 15 per cent for preparation of the land and 28 per cent for selection of good plants and seed.

It is important to note that the greater part of the workers rank as unskilled in four main operations which have an immense influence on the yields and revenues of the farm estates. These operations are: the pruning of citrus- and other fruit-trees, manuring, treatment against diseases and insect pests, and the marketing of crops, with unskilled workers totalling respectively 98 per cent, 88 per cent, 80 per cent and 83 per cent.

It is worth noting that the following of instructions given by the departmental directorates of agriculture and the estate managers is made difficult by the lack of skills of the majority of the workers. Thus in treatment against diseases and insect pests, the workers perform the drill but do not know what products to use or in what quantities to use them; they know that fertilizers are necessary for what they are growing, but they do not know what kinds or what amounts to use, how to apply them or what effect they will have; they know that water is needed for citrus fruits and market-garden crops but they do not know the methods of irrigation recommended.

CONCLUSIONS

The conclusions of the survey may be summarized as follows:

1. All the workers on the self-managed farm estates in the region covered by the Algeria II project ('modern' agricultural areas where intensive farming methods are used) have technical responsibilities in carrying out their tasks.
2. The work requires the workers to have technical skills in a certain number of major farming operations.
3. Most of the workers, both supervisors and hands, need to be taught certain techniques to master these operations and increase the production level of their estates.
4. The technical work carried out is of fair standard, despite the lack of skills of the majority of the workers, thanks to a certain number of senior land-workers who have acquired practical experience. When these workers are no longer there, a difficult situation may arise.
5. The workers' introduction to agricultural technology through the functional literacy programme is a prime necessity if one wishes to place them in a position to learn more, to improve their work and to increase the level of production of their farm estates.
6. The technical content of the functional literacy programme should cover the main farming operations.
7. The results of this survey may serve as basic information for evaluation purposes. The analysis of the workers' skills can be taken as a usable starting-point for establishing the indicators necessary for evaluation.

Document 6
Functional literacy experiment in a phosphates company (Morocco)

DESCRIPTION OF ENTITY

The Office Chérifien des Phosphates (Sherifian Phosphates Office), or OCP, is a State corporation with a monopoly of the working and sale of Moroccan natural phosphates.

This company, which fills one of the most important places—if not the most important—in the economy of the country, had a staff of 14,000, of whom 85 per cent were illiterate before the introduction of the literacy training system. The absence of supervisory staff, technicians and skilled workers was a heavy handicap in the economic battle being fought by this Moroccan pioneer enterprise. It was because of this factor that the head office turned its attention to working out an internal promotion programme intended to reach the mass of illiterates, a labour reserve which had to be upgraded, primarily in the interest of OCP, as well as of the participants and finally of the country as a whole. This objective could only be reached by the development of adult-training techniques, which posed specific problems and required large-scale resources, but which was deemed an investment with an early pay-off, and essential for economic expansion.

Consequently, the only matter to be considered was that of seeking a new method, retaining the positive elements of the two processes represented first by literacy studies and the acquisition of 'book knowledge', and secondly by practical training for a specific trade—these two elements being closely linked to effect a synchronous development of all the individual's aptitudes.

SEARCH FOR A METHOD

In determining the method to be used, account was taken first of the population group for training, and secondly of the posts to be provided for in the organization.

Population group for training

The OCP socio-occupational *milieu* presented a majority of 'worker-peasants', as the majority of the illiterate labourers had not broken their links with the land. Outside of his shifts in the mine, the 'casual', once back in the family group, reverted to the tasks of his farm, his rhythm of life and his habits of thought.

The thinking of the illiterate worker, structured by rules, customs and taboos which operated in the *fellah* socio-cultural *milieu*, was an obstacle to his understanding of the industrial world, rationalized and organized in accordance with the technological spirit of the societies of the West. The individual found himself being pulled in two directions by two opposing ways of life: a traditional way of life and a technical way of life, structured by scientific reasoning.

There was no question of passing a value judgement on these two forms of thinking, or putting one above the other, but simply of alternating the possible sources of conflicts liable to develop in individuals living in both these worlds, and to inhibit aptitudes and possibilities of adaptation.

While preserving those traditional values which are of capital importance for the cultural stability of a people, it became necessary to equip the

subjects with elements of scientific thought essential to eliminating a sense of estrangement from the industrial world around them.

Understanding this industrial world involves a knowledge of abstract notions—geometrical, scientific (weight, temperature, etc.), technological (strength of materials, machining, etc.), and mathematical (equality, proportions, etc.).

Posts to be filled

At OCP, the problem was to fill posts of fairly complex characteristics in the three basic branches: mechanical, electrical and electro-mechanical.

A study was made of these posts by job-analysis methods promoting the definition of all the elementary tasks which each involved. Given their number and variety, it would have been uneconomic to devise different basic training courses for each of them; the 'common-stream' method was therefore selected.

The schematization of the method is as follows. Suppose that a certain number of posts (1, 2, 3, 4, 5, 6) have to be filled, comprising elementary tasks indicated by letters (see the accompanying table).

The basic introductory technical programme for all the subjects will be prepared on the basis of the tasks common to all posts, i.e. *a* and *b*.

The common-stream programmes, for each of the branches, will be determined by the tasks common to all jobs in a particular branch, i.e. *c* and *d* for the mechanical, *e* and *f* for the electrical, and *g* and *h* for the electro-mechanical.

Distribution of posts and elementary tasks by branch

Branch	Posts	Elementary tasks
Mechanical	1	*a, b, c, d, f, i, j*
	2	*a, b, c, d, k, l*
Electrical	3	*a, b, e, f, m, n*
	4	*a, b, e, f, o, p*
Electro-mechanical	5	*a, b, g, h, q, r*
	6	*a, b, g, h, s, t*

The specialization programmes for each of these posts will be based on the tasks specific to each post, that is: *i* and *j* for post 1; *k* and *l* for post 2; *m* and *n* for post 3; *o* and *p* for post 4; *q* and *r* for post 5; *s* and *t* for post 6.

This method should make it possible to train the semi-skilled workers (category 4) in the miners' code required for all the posts, in three stages:

Stage 1. Common introductory technical course for all entrants.

Stage 2. Common-stream courses for each of the three branches (a preliminary streaming of trainees should take place at the end of the introductory technical course).

Stage 3. A specialist course for each post to be filled, with a second more specific streaming of the trainees.

Document 7

Functional Literacy Experiment, Vale do Rio Doce (Brazil)

In the context of the Experimental World Literacy Programme, an experimental operation in an industrial *milieu* was carried out in Brazil, with the assistance of Unesco.

The sphere of operation was the mine-based industrial complex of the Companhia da Vale do Rio Doce, a State corporation employing about 10,000 hands.

The identification of the problems was effected on the basis of the information provided by the analytical accounting practised in certain of the corporation's departments and records:

Costing services.

Purchase- and stock-control service.

Quantitative and qualitative returns of single parts and assemblies.

Return of hours of attendance and hours worked.

The problems thus identified are the following:

Frequent bad machinery.

Frequent accidents at work.

High level of absenteeism.

Waste of raw materials.

Damage to tools.

Frequent breakdown of machinery.

Bad maintenance.

Muddle and inadequate tidying.

Excessive overtime.

Inadequate contacts between workers and supervisors.

Communication difficulties due to the illiteracy of the hands.

Document 8
Gezira Development Project (Sudan)
Identification of problems

PROBLEMS PRESENTED BY THE SCHEME'S DIRECTORS AND TECHNICIANS

During the meeting with those responsible for the Gezira scheme, as well as during subsequent meetings with various local technicians involved in the scheme (whose action covers the team's area of intervention), problems impeding the economic development programmes and suitable for treatment by an educational training programme such as functional literacy were presented; these could be divided into two broad categories: general problems of a socio-cultural nature, mainly caused by an unfavourable attitude towards economic development; and problems related to specific agricultural operations, attributable to unfavourable attitudes and/or lack of knowledge and skills. The main problems within the first category are as follows.

GENERAL PROBLEMS OF A SOCIO-CULTURAL NATURE

The fatalism of farmers

This problem has economic implications in respect of the income of tenants. Because of it, many farmers fail to carry out necessary action for the improvement of yields.

Excessive or unproductive spending patterns

On the occasion of many events such as marriages, births, etc., large amounts of money are spent which could have been used in productive investment.

Uneconomic use of cattle

Farmers tend to acquire the largest possible number of cattle as a status symbol but generally refuse to sell the milk since this is considered demeaning.

Tribal fanaticism

This factor has repercussions on the functioning of co-operative societies. Farmers tend to select members of their tribe for the board regardless of their professional qualifications and competence.

Negative attitudes towards manual labour

Because of their nomadic origin and their cultural background, many farmers do not attach high value to manual labour. They tend to hire agricultural labourers to carry out the operations for them, thereby reducing their own income. They devote only a limited amount of their time to work in the field, and do not make full use of the working potential of members of their families, especially wives and grown-up daughters.

Absenteeism of tenants

The negative attitude towards manual labour sometimes leads to complete absenteeism of farmer/tenants who entrust the management of their holdings to hired personnel.

Low educational level

The rather low educational level of many tenants impedes the communication of technical information and complicates the task of agricultural extension workers.

Negative attitude towards scientific information

Farmers tend to be sceptical about the technical information communicated to them and sometimes resist the introduction of innovations.

The most important problems in the field of agricultural practice now facing the Gezira scheme, and which could be tackled by functional literacy action during the months of January and February, are as follows.

PROBLEMS RELATED TO SPECIFIC AGRICULTURAL OPERATIONS

Insufficient participation of members of the family in cotton-picking

Cotton-picking, which usually takes place between February and April, is an activity which requires a large amount of labour. Normally the tenants hire seasonal labourers, mainly from the western provinces of Sudan. However, as regards the agricultural season in question, cotton was planted on 20 July instead of in August (following the recommendations of the research station), and harvesting started in January. At that time, seasonal agricultural activities in western Sudan had not been completed and tenants were finding great difficulty in attracting seasonal labourers. The mobilization of all manpower available in the tenant's family was therefore of the utmost importance, especially since cotton-picking cannot be delayed and since the yields that year have been high. Nevertheless, it seems that some tenants are still reluctant to allow members of their family, particularly wives and daughters, to participate in picking.

Faulty practices in cotton-picking and baling

Picking and baling cotton are operations which require knowledge, mastery and application of certain techniques. It would seem that many farmers either do not know or do not correctly practise the following techniques:

Starting to pick the cotton on the borders of the holding and not in the first canal.

Picking fallen cotton before picking cotton on the plant.

Picking the bottom of the plant and then the top, and not vice versa

Leaving two *jadwals* (the smallest canals) between picking and irrigation.

Watering the holding slightly, and not heavily, during the picking process.

Watering as frequently as required.

Putting the heaps of picked cotton on a cloth and not on the bare ground.

Cleaning the cotton of any foreign element before pressing.

Taking care not to press *oweirah* (damaged cotton balls) with the cotton.

Taking care not to overpress cotton in the bales, and limiting the amount to a specific number of baskets.

Pressing cotton in the bales as quickly as possible in order not to leave heaps of unpressed cotton for a long time in the open air.

Faulty practices in wheat-watering

Watering is the main operation as far as wheat is concerned during January and February. The technicians feel that many farmer/tenants fail to perform watering operations correctly. They do not observe the required frequency in watering and they do not water heavily during the flowering stage and lightly during the ripening stage.

Ignorance of wheat pests

Many farmers seem to be unable to identify signs of pests, particularly aphis, which may attack wheat during January and February. Even when they notice that their wheat is being attacked, they sometimes fail to inform the agricultural authorities.

Misuse of water in general

There is a strong belief among farmers that the more they use water the more they will benefit. They are unaware of the relation between climatic conditions and watering. They generally over-water their crops, sometimes depriving tenants of their share.

Other problems related to agricultural practices

Other problems which might be tackled by functional literacy teaching were also mentioned, e.g. delays in the process of cotton-harvesting, failure of farmers to refund loans, ignorance of marketing of ground-nuts, unsatisfactory functioning of marketing co-operatives, etc.

PRIORITY ECONOMIC OBJECTIVES (FIVE-YEAR PLAN) 1970–75

Cotton. Increased productivity per acre.
Ground-nuts and wheat. Increased productivity per acre.
Livestock. Improvement of livestock.

PLANNED TECHNICAL INNOVATIONS

Cotton

A revised system of crop rotation.
Improved seeds.
Mechanical application of fertilizers.
More rational use of fertilizers.
Better pest control.

Ground-nuts and wheat

Mechanization of wheat and ground-nut cultivation.
Improved seeds.
More efficient pest control.

Livestock

Better care of livestock.

GENERAL PROBLEMS

Economic problems

Scarcity of seasonal (migrant) labour for cotton-picking.
Delays in cotton-harvesting.
Low productivity of ground-nuts, wheat and dura cultivation.
Ignorance of marketing of ground-nuts.
Unsatisfactory functioning of marketing co-operatives (Union of Marketing Co-operatives).
Failure of farmers to refund credit loans.

Technical problems

Limited knowledge of mechanical equipment.
Over/under irrigation; ignorance of climatic factors.
Lack of adequate communications between the project (research station) and the farmers.
Low educational levels impeding printed technical information.
Failure of farmers to comply with instructions.
Faulty technical practices (cotton-picking).
Unawareness of pests attacking wheat.

Socio-cultural problems

Fatalism of tenants.
Negative attitude towards manual labour.
Negative attitude towards family labour (wives and children).
Absenteeism.
Negative attitude towards scientific information (farmers may know but do not believe).

Chapter 3

Pedagogical strategy

To achieve the development objectives, the planning or organizing authorities (technical ministries, managements, and so on) define a global operational strategy which calls into play the traditional production factors: capital (land, machines, installations, raw materials, finance) and labour.

The objectives make up the 'target' in terms of which is decided the course of the action taken, i.e. its progression.

They are the strategic objectives which should never be lost sight of. If they come to be modified, the strategy must itself be worked out anew and, if they come to be abandoned, the whole strategic plan collapses and the functional literacy operation becomes pointless.

The pedagogical strategy will consist in adapting the functional literacy action to the exigencies of the global strategy and, to this end, defining the most suitable pedagogical systems.

The formulation of this strategy comprises two fundamental stages: definition of the training objectives and definition of a pedagogical system which will enable these objectives to be attained.

DEFINITION OF THE TRAINING OBJECTIVES

This definition should consist in taking the problems, listed in order of urgency, and in terms of behavioural changes in trainees.

Definition of priorities and programme elements

Priorities. The problems identified do not all present the same degree of urgency, having regard to the evolution of the action as it progresses towards the objectives.

It therefore becomes necessary to determine priorities and to plot the course of action in a tactical seriation which will secure maximum effectiveness.

This seriation will need to take into consideration the individual or group needs as expressed during the study of the *milieu*. An effort should be made to assign priorities by correlating the problems of urgency considered in their relationship to collective needs and the felt needs for which there are the strongest motivations.

See Document 9, page 58

Obviously, in agricultural areas the order of priorities must itself be substantiated to the agricultural calendar.

Programme elements. The list of problems thus drawn up provides, term for term, the corresponding programme elements.

See Documents 10–12, pages 59–61

There follow some examples of programme elements, listed in order of priority on the basis of the survey data. The themes selected correspond to the situations in which the problems have been identified.

Restatement of priority problems in terms of training objectives

Functional literacy work—a training operation. Functional literacy action always forms part of a development programme. Its field of application is, therefore, a social, occupational and cultural *milieu* in the process of transformation, where the economic evolution demands, *inter alia*, a corresponding change by individuals and groups—their technological adaptation (i.e. the adjustment of their behaviour patterns to new work and production norms).

In an agricultural *milieu*, the peasant is invited to adapt his behaviour to the national or local development policy, whether by adopting new methods and techniques of cultivation, by the introduction of new varieties of crops or by the institutional updating of production and marketing (co-operatives, self-management, agricultural loans, and so on).

In an industrial *milieu*, technological adaptation is carried out to productivity standards, and to clearly defined time-structuring and production rhythms to which workers with a rural background are not always accustomed.

In either case, those concerned have to acquire knowledge and learn work habits that will make them capable of change.

The major aim of functional literacy work is, thus, to induce individuals to learn to grow, i.e. to learn to adjust themselves to change and to be agents of change.

To this end, functional literacy work seeks—within the specific context of each social and economic situation—to develop not only

the technical and professional skills of the individual and his mental analytical equipment but also his powers of conceptualization and communication in order to facilitate his adjustment to the standards, conditions and values implied by the change in which they will have to participate.

Adjustment to change does not consist merely in conforming to the *milieu*. It also means a desire and voluntary commitment on the part of those concerned to participate in changing it.

The training objectives of functional literacy action cannot therefore be limited to the mere acquisition of knowledge. It is not simply a question of learning to know but also—and essentially—to act.

These objectives must, therefore, be clearly perceived for each situation-problem; it is always important to have the objectives in mind, and not to lose sight of the fact that whatever the instruction being taken (whether to acquire knowledge, or skills, or capacity for oral and written communication), it must be planned and guided so as to have positive effects in the domains of the subject's knowledge, know-how and personal adjustment (economic behaviour, conduct at work, and so on).

The ultimate purpose of work-oriented literacy action must not be scaled down to mere preparation for a 'situation' in the narrowest sense of the term.

It is man who is the ultimate purpose—not man in the abstract, but in the flesh, engaging in development action in order to change his environment and improve his situation.

The training objectives. In practice, the training objectives are subjacent to the problems and the programme elements. It is not necessary to list them explicitly, but it is essential not to lose sight of the changes aimed at so as to view work-oriented literacy action throughout in terms of education and moulding and not of mere instruction.

It is obvious that the training objectives also include the literacy needs of the population in question.

See Document 13, page 62

DEFINITION OF A PEDAGOGICAL SYSTEM ADAPTED TO THE REALITIES OF CONCRETE ACTION

We must beware, in this matter, of the habits acquired in conventional educational systems marked by a strong tendency towards bureaucratic centralization in the planningal of educational policy.

The determination of a functional pedagogical system must be effected on the basis of the data obtained from the context study. The following elements should be taken into account: training objectives; situation-problems; programme elements; sociological and psychological data (attitudes and comportments, role of the sociological forces, motivations, intellectual profile of the 'integrated' adult, etc.); available human agents (instructors, inspectors, producers of educational material, technicians, educators, etc.); production and distribution capacity for the educational material, at the local level as well as at regional or national levels.

These various elements must serve to determine the precise functions of the system and its structure. The main function of the system should be the training of functional literacy workers in the efficient discharge of two tasks: conception and elaboration of the programmes, methods and educational material; and conduct of the programmes.

For the definition of a system adopted to each situation, three categories of means will be married: human, methodological and technological.

Human resources

At the level of pedagogic elaboration. Given the interdisciplinary nature of functional literacy action, the team responsible for working out the needed pedagogic action and the methodological and technological media to be employed must be multidisciplinary in its make-up. It must include, in the first place (and according to local possibilities), specialists on the concerned *milieu* (engineers, technicians, economists, sociologists, psychologists, etc.) plus elements which bring necessary assistance from the outside (educators, technicians, evaluators, etc.).

At the level of the execution and supervision of functional literacy action (instructors, education advisers, inspectors, etc.). The human resources available vary from one *milieu* to another. One should not call exclusively upon the services of teachers from the conventional type of school, whose socio-professional purview, limited to the world of children, responds only imperfectly to the engineers of adult functional education. Rather, it will be advisable to see to it that the personnel necessary for the execution of the pedagogic strategy come, so far as possible, from the socio-occupational *milieu* itself.

The roles of those involved must be specified in a functional organization chart, which must be established for each functional literacy programme. Documents 14, 15 and 16 show three examples of such charts, worked out from the starting-point of a specific situation with all its possibilities and particular features taken into consideration.

See Documents 14–16, pages 63–7

Methodological media

Once the appropriate and available personnel have been located, organized and trained, the next step is to determine the methods to be employed in achieving the desired objectives. This will be done in the light of the characteristics of the socio-occupational situation, as they emerge from the context study.[1]

Technological media

The educational action involves the elaboration of teaching instruments adapted to the method selected, to the circumstances and to the pedagogical imperatives.

For a given type of instructor and a *milieu* whose possibilities in regard to the production and distribution of the educational requisites are known, what kind of teaching material should be produced? How should it be prepared and tested? How should conventional teaching aids (cards, booklets, various guides, and so on) and audio-visual materials (posters, filmstrips and, possibly, films, radio and television) be integrated within a single system, to meet the requirements of a single programme?

The answers to these questions will form the subject of the second part of this guide.

1. See Chapter 6, below.

Document 9

Gezira Development Project (Sudan) List of priority problems selected for January and February 1971

The problems considered most important as regards the development project's priorities and the timing of the necessary action are:

Family participation in cotton-picking.

Short-comings in cotton-picking techniques (including watering).

Faulty practices in wheat-watering during January and February.

Incomplete awareness of diseases which attack wheat in January and February.

Document 10

Functional Literacy Project (Algeria)
Staouéli region

AGRICULTURAL TECHNICAL TRAINING

Manuring.
Disease and pest control.
Pruning of trees.
Harvesting.
Final processing.
Irrigation.

TRAINING FOR SELF-MANAGEMENT

The worker's collective and the organs of self-management.
The socio-educative role of self-management.
The power of decision of the workers' collective.
Role of each of the self-management organs.
Management control.
Participation in revenue.

Document 11

Functional Literacy Project (Madagascar)
Befandriana Operation
Programme adopted after studying the problems

(see Document 4)

RICE

Preparation of the seed-beds.
Sowing.
Preparation of the rice field.
Transplanting.
Weeding.
Rice parasite control.
Harvesting.
Threshing.
Marketing of crop.
Replacement of seed.

GROUND-NUTS

Preparation of soil.
Sowing.
Weeding.
Harvesting.
Crop rotation.
Marketing of crop.

STOCK-FARMING

Herding.
Feeding.
Measures to prevent livestock losses.

MISCELLANEOUS

Kitchen garden.
Purchasing estimates for agricultural tools.
Micro-hydraulics.

Document 12

Functional Literacy Experiment (Morocco)
Vocational pre-training in the phosphate mines

The teaching, which is provided every other day, is organized and structured as in technical and vocational training establishments, but it takes place within the production context.

The advancement of the illiterate workers is carried out in two stages:

Stage 1. Introductory technical training: eight months, half-time. Return to production work. Trade training-course: minimum six months.

Stage 2. Specialized training for a specific post: three to four months, full-time. Return to production work. Trade training-course: minimum one year.

Literacy teaching is carried out in a foreign language (French).

PROGRAMME ELEMENTS

New entry technical training has two phases:

Introductory technical training (first cycle), which brings trainees up to a level characterized by the following elements of knowledge and skills: 700 French words spoken, read and written phonetically; three arithmetical operations (addition, subtraction, multiplication) on numbers from 0 to 100; free-hand drawing of three aspects of a simple object; the making, to a dimensioned drawing, of a part involving filing, chiselling and sawing operations; rudiments of anatomy, first aid, the three states of matter.

The common-stream course (second cycle), which brings trainees up to a level characterized by the following items of knowledge and skills: 1,500 French words; the four arithmetical operations with whole numbers and fractions and the solution of problems; measurable quantities (lengths, areas, volumes, angles, forces, linear velocity, velocity of rotation, pressure, density, output, potential difference, current strength, resistance); fitting, welding, low-voltage circuit, dismantling and rebuilding machine assemblies; mechanical drawing of the various elevations of an object with representation of hidden portions; accident prevention and first aid.

Document 13
Gezira Development Project (Sudan)

PROBLEMS

Cotton-picking (see Document 9).

TRAINING OBJECTIVES

1. To encourage favourable attitudes towards manual labour, especially in respect of the major economic activity of the community, i.e. cotton-growing.
2. To encourage awareness of the importance of participation by all members of the family, particularly women and girls, in cotton-growing operations.
3. To equip tenants with technical knowledge concerning all operations in cotton-growing, especially picking and pressing.
4. To equip tenants with the appropriate technical skills required in cotton-picking, cleaning and pressing.
5. To inculcate awareness of the various aspects of cotton-picking with a view to bridging the gap between technical know-how and actual practices.
6. To provide learners with the ability to (a) read and write some of the words relevant to cotton-picking operations, and (b) acquire the ability to read and understand sentences related to these operations.

Document 14

Functional Literacy Project (Madagascar) Befandriana Operation

This operation comes under the Ministry of Agriculture. The Commissariat à l'Animation Rurale (Rural Development Commissariat) of the Secrétariat d'État au Plan et au Développement (State Secretariat for Planning and Development) which was otherwise responsible for the work-oriented literacy project, is participating in the training operation.

The organization chart that follows integrates the activities of the services involved. It has been drawn up in order to:

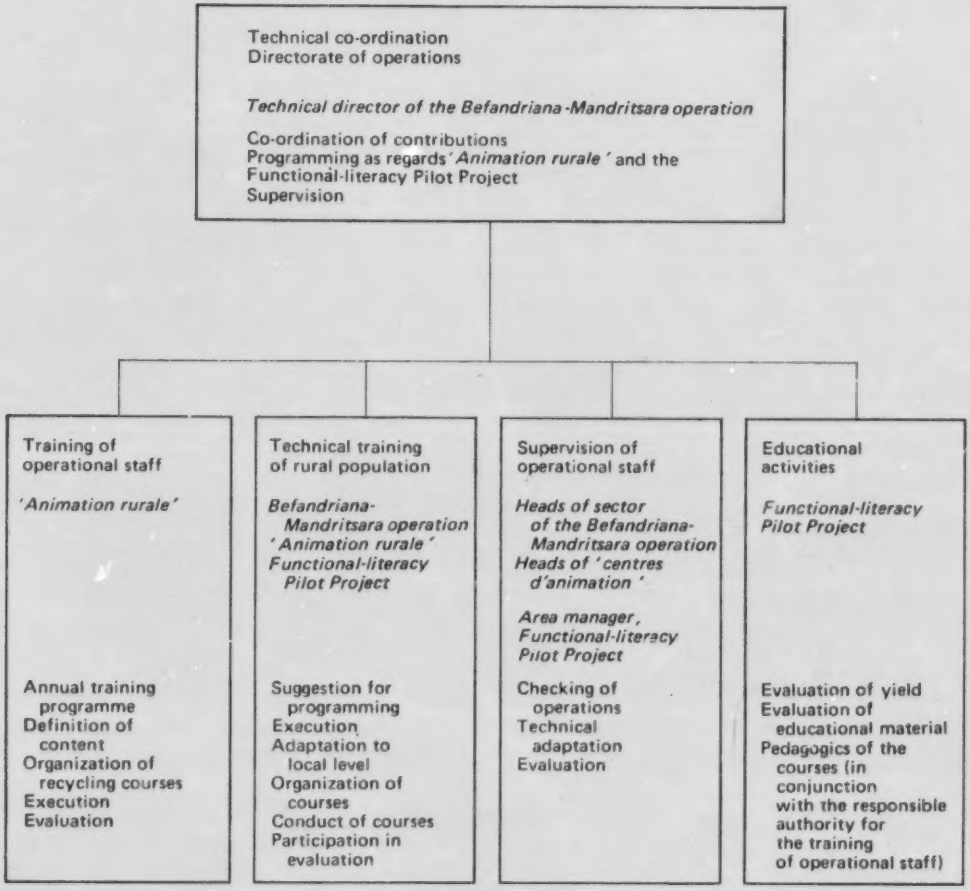
Make organic provision for the integration of the services taking part in the development operation.

Organize the work by distributing tasks according to main areas of technical competence.

Ensure the harmonization and effectiveness of the activities pursued.

Establish permanent working relations between the different services.

Thus, the functional organization chart excludes all hierarchical considerations and rules as an element in the organization of the work. It is prepared at the level of the sector in which the operation takes place. It remains obvious, however, that at the execution stage there are good reasons for taking the fullest account of the administrative structures. In this respect the direct contact of the subprefect is the head of the sector where the operation is taking place. He must be careful to: (a) keep the representative of the central authority informed; and (b) associate him with the decision-making, with a view to harmony with the development objectives of the district authorities (*sous-préfecture*).

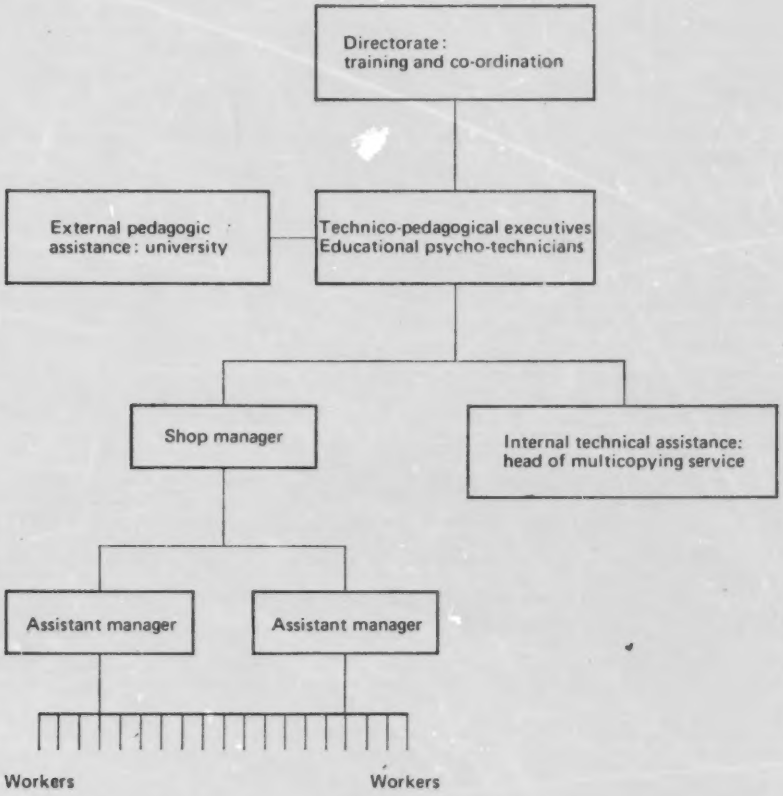


Functional organization chart, Befandriana subproject.

Document 15

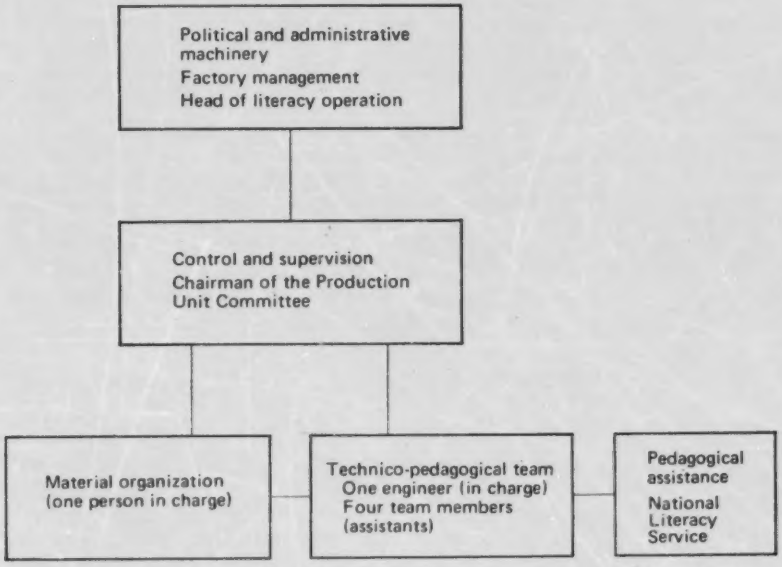
Functional Literacy Experiment, Vale do Rio Doce (Brazil) Pedagogics Planning Team

The team is made up of teachers and psychotechnicians on the staff of the firm. It comprises: head of multicopying service; pedagogic analysis section (three persons each working seventeen hours a month on the experiment); civics and socio-economic material drafting section (two persons working seventeen hours a month on the project); shop or work-site manager (devoting thirteen hours a month to preparing the technical instruction); outside assistants (university and other literacy-teaching bodies) for the pedagogics. (See organization chart on page 66.)



Organization chart of the training scheme.

Document 16
Functional Literacy Project (Guinea)



Organization chart of the local factory unit (NSAP).

Chapter 4

Role of the *milieu* at the different stages of the functional literacy operation

Throughout the process of translating the objectives and problems into terms of educational action, the role of the *milieu* is fundamental. The fact is that there can be no effective functional literacy programmes meeting actual problems and needs unless the *milieu* espouses the operation in all its aspects from inception to culmination.[1]

PREPARATORY SURVEY

At this level, significant results such as help towards the elaboration of programmes geared to real problems and needs cannot be expected unless the population concerned (authorities, technicians and the illiterates themselves) plays an effective part in analysing its own situation. In other words, to a considerable extent the analysis must be self-analysis in the course of which those concerned will need to have a clear view of the development objectives of the operation concerning them, to be able to take informed decisions about everything relating to the means to be employed.

The instruments for the context study (questionnaire, interviews, check lists, comparative scales and so on), must be devised, tested and utilized with the conscious and informed participation of the specialists in the field. The same applies to the interpretation of the results obtained.

PEDAGOGICAL STRATEGY

An effective pedagogical system cannot be produced without considering the people affected. In this sense, the executives of the development operations will need to play a particularly important

1. See 'Human Resources', in Chapter 3, above.

part in defining programme priorities, content and methods, at the stages both of preparing the methodological experimentation and of the operation itself.

Definition of priority programme elements

Here, the specialists in the *milieu* engaged in the development activities, because of their direct experience of the problems, are in a position to name the proper programme elements and define their substance.

In any event, and whatever the value of the external assistance, the programmes cannot be soundly prepared without the involvement and participation of these specialists.

The illiterate population itself will also have a word to say on the question, through its representatives (trade unions, works committees, supervisors, organizations of various types) or through a significant sample of the populace.

Establishment of the pedagogical progressions and contents of programmes

In this domain the specialists in the *milieu* should be qualified to: estimate the pedagogical progressions; adroitly establish suitable linkages between the practical training activities on the ground and the theoretical classroom instruction; specify the contents needed; participate, in regard to the literacy instruction proper, in the compiling of the socio-occupational vocabulary to be used in the reading texts; and define the situations which can be translated into mathematical terms, for the purpose of introducing arithmetic as a working and training instrument.

Preparation of the instructional material

The instructional material must be prepared by the educators; however, before being put into use, it should be appraised by the specialists responsible for the development operation, and their opinion should be taken into account for the finalization of the material.

The functional literacy operation

As far as possible, the instructors should be recruited from the socio-occupational *milieu* itself, in which they have direct experience. This is

an especially important point, not simply because of the technical knowledge of such teachers, but because of the facility in communication with the illiterates which a common socio-occupational origin gives them.

In the course of the functional literacy sessions (practical training, theoretical instruction and literacy teaching proper), the participants' observations and conclusions will be sought on the content and form of the sessions, and on the methods and material employed.

In order to obtain the feedback data—needed for improving the instructional operation—a suitable questionnaire will need to be completed periodically by the instructor and sent to the instructional-planning team. Data collected in this way will have to be carefully analysed; such information exhibits the positive and negative aspects of the curricula and thereby the correct modes of action.

New problems may arise as a consequence of the training itself, and may be perceived with special sharpness at the participants' level of direct awareness. All data gathered in this way will be taken into account for the improvement of the programmes, the content and the didactic instruments.

In conclusion, the *milieu*'s espousal of the literacy operation constitutes a fundamental methodological prerequisite, but it must persist throughout, from the moment of the basic survey to the literacy operation proper, so that knowledge of the environment may become increasingly fuller, and the functional literacy action better and better adapted to the problems and the needs.

Figures 2 and 3 illustrate the processes followed for the translation of the development objectives into operational programmes, and the role of the *milieu* in these processes and in the instructional strategy itself.

Figure 2. From the development objectives to problems and needs in regard to training.

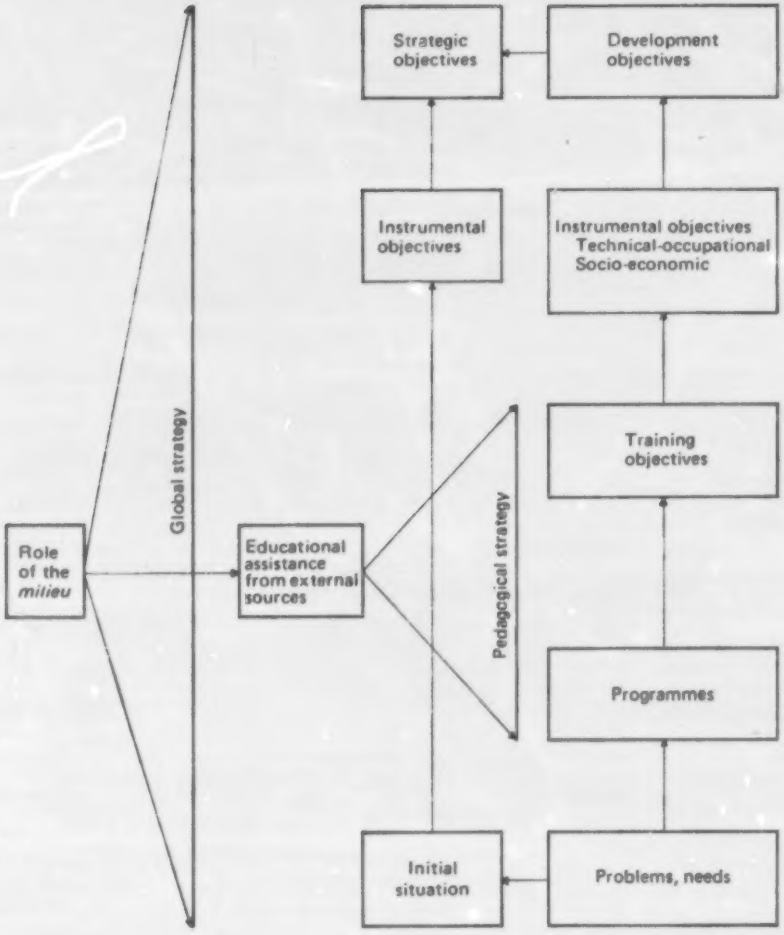


Figure 3. Pedagogical strategy and the role of the *milieu*.

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Part Two

Application of the pedagogical strategy

Chapter 5

Establishment of progressions

Arising from the objectives in view, the context study yields the elements of the programme by a process of deduction. It is important to keep the necessary primacy of these elements well in mind, and to consider the progressions as a march towards the objectives.

The ordering of the programme elements, as established on the basis of the priorities, emerges in the form of 'chains' of problems. This is the basic progression which should be followed in the pursuit of the objectives. But the programme elements are expressed in broad and general terms: they therefore need to be analysed, in order to determine the content that each implies.

DEFINITION OF CONTENTS

At the level of any given problem, content must be arrived at from two points of departure; the first being the objectives aimed at and the second, the possible individual needs and desires of the peasants themselves.

The contents must reflect the complementarity, not the incompatibilities, of the collective and the individual needs; but at the action level due weight must be given both to the positive and the negative elements identified during the context study.[1]

Contents meeting the expectations of the individual

Document 17 shows the use that may be made of data from the exploratory analysis of the *milieu*.

See Document 17, page 80

We note, in this specific case, that the responses to the desires and expectations of those concerned can and should figure in the

1. See Chapters 2 and 4, above.

'item contents' worked out from the objectives and problems as defined by those responsible for the Befandriana pilot project.

'*Item contents*' *fitting the training objectives of the development project*

For solution in the perspective of training objectives, the problems call for a diversity of answers to match their own diversity.

By way of example, let us consider the question of rice transplanting at Befandriana not as a problem in the abstract but as a specific and concrete problem arising in a socio-cultural and economic *milieu* of clearly marked characteristics. This problem calls for contributions to the answers by replies to the following questions:

Why does almost the whole of the population (95 per cent) of Befandriana fail to practise rice transplanting?

What is involved in the technique of transplanting in rows (technico-occupational aspects)?

Why must the transplanting be in rows (economic, scientific and mathematical arguments)?

In this specific case, the major content aspects are two in number, concerning, on the one hand, the concepts necessary for an understanding of the problem, and on the other, the procedures for communicating those concepts. Thus, the following domains are concerned: occupational and scientific technical training; introduction to socio-economics; functional mathematics (mathematical aspects of the technical problem); oral communication ('*animation*') and written communication (literacy training).

Therefore, the contents must accordingly be defined for the 'problem chains' of each functional literacy project on the basis of the programme elements already established. They must then be arranged methodically, in a didactic perspective.

ESTABLISHMENT OF DIDACTIC PROGRESSIONS

The items of knowledge to be acquired must be linked on logical principles to be laid down in each specific case, following the problem chains leading to the objectives.

Three kinds of didactic progression can be distinguished within this approach to the objectives: progression by work units (centres of interest, exercise unit, sequences, etc.); the progression or linkage of the different instructive elements within a single work unit; the internal progression formed by each lesson at the learning level.

Didactic progressions by work units

Fixing of didactic progressions after the establishment of the instructional instruments. In this approach, the first step is to prepare the various instructional instruments necessary for the literacy action: vocational training-guides for the instructor; 'vehicular' readers or cards for the illiterates; writing booklets or cards; arithmetic booklets or cards for the illiterates; arithmetic booklets or guide-cards for the instructor; visual teaching aids (posters, etc.).

The substance—that is to say the sum of knowledge in the programme—is thus developed and put in shape from the pedagogical point of view. This process is followed by a division of the material into work units, which link up to cover the chosen functional literacy cycle.

The functional literacy project in Tanzania is an example of this approach.

See Document 18, page 81

Establishment of the progressions preliminary to the elaboration of the instruments of instruction. The training elements are split up into work units of varying size—also termed sequences—representing a content segment forming a homogeneous and meaningful whole. Two approaches are generally used in fixing the progressions: either these are in terms of the technico-occupational and/or socio-economic training only, with reading and arithmetic lessons worked in progressively throughout the drafting of the sequences (Documents 19 and 20), or the progressions embrace the whole training content at these levels (Document 21).

See Documents 19–21, pages 82–9

Document 17

Functional Literacy Project (Madagascar)
Befandriana Development Project

Reference to Document 1 can yield a certain amount of information of use in the elaboration of the programmes.

READING

The peasants want to learn to read so as to be able to keep a check on the activities of the administrative authorities as well as to acquire from books the technical knowledge they need.

ARITHMETIC

The peasants want to learn to calculate:
The value of their production.
The total price of their purchases or sales (90 per cent of the people interviewed).
Weights—especially the weights of produce (84 per cent of the subjects interviewed).
Relationship between weights and prices.
Volumes and capacities, so as to calculate the volume of agricultural production (83 per cent).
Areas, lengths and distances (83 per cent).

OCCUPATIONAL INFORMATION

Improvement of cultivation techniques.
Techniques of animal husbandry.
Marketing problems.
Scientific aspects.

Document 18
Functional Literacy Project (Tanzania)

THE INSTRUCTIONAL MATERIAL

The instructional material prepared for functional literacy operations in the cotton sector consists of three booklets and twenty-two posters:

A booklet for integrated instruction in reading, writing and numeration (numbers from 1 to 100), for the use of the illiterates.

An instructor's guide to cotton-growing.

An instructor's guide to the use of the instruction booklet.

Twenty-two posters (enlargements of illustrations in the reader).

THE CONTENTS AND THEIR DEVELOPMENT

Reading, writing, arithmetic

There is a total of twenty-six lessons, of which twenty-two relate to cotton-growing (vehicular literacy) and four (lessons 4, 16, 20 and 26) to practice in literacy skills:

1. Cotton is Wealth.
2. Soil Preparation: Ridging.
3. Weeding of Ridges.
4. Literacy Skills (I).
5. Use of Fertilizers.
6. Fertilizers and Quantities to Apply.
7. Tilling and Hoeing.
8. Sowing Cotton at the Right Time.
9. Cotton Seedlings.
10. Synthesis of first nine subjects.
11. Thinning Out.
12. Weeding of Cotton.
13. Fertilizers: Second Application.
14. Synthesis of contents of first thirteen lessons.
15. Insects which Attack Cotton.
16. Literacy Skills (II).
17. Destruction of Insects.
18. Treatment of Growing Cotton (I).
19. Treatment of Growing Cotton (II).
20. Literacy Skills (III).
21. Ripening.
22. Picking.
23. How to Store while Awaiting Sale.
24. Sale of Cotton.
25. Clearing of Ground: Destruction of Cotton Roots and Stalks.
26. Literacy Skills (IV).

Numeration (reading and writing of the first 100 numbers) is taught concurrently with reading in Lessons 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15 and 17.

Instructor's guide to cotton-growing

This provides the instructor with the necessary technical knowledge for growing cotton and performing the practical demonstrations.

THE DIDACTIC PROGRESSIONS

Reading lessons 3–25 are tied in with eight major agricultural operations:

1. Preparation and Fertilization of the Soil (Lessons 3, 5, 6, 7).
2. Sowing (8, 9).
3. Thinning Out (11).
4. Weeding (12).
5. Fertilizing (13).
6. Treatment of Growing Cotton (17, 18, 19).
7. Picking and Marketing (21, 22, 23, 24).
8. Cleaning of Land after Harvesting (25).

Document 19

Functional Literacy Project (Mali)
Tomato sector

VOCATIONAL TRAINING SUBJECTS

1. Preparation of the Tomato Nursery.
2. Sowing (Method, Density, Date).
3. Preparation of Organic Manure.
4. Use of Organic Manure.
5. Revision.
6. Dibbling of Field for Planting Out.
7. Manuring of the Holes before Planting Out.
8. Plant Nutrition.
9. Fertilizers Suitable for Tomato Plants.
10. Revision.
11. Transplanting.
12. Transplanting in the Nursery, or First Transplanting.
13. Planting Out or Second Transplanting.
14. Irrigation by Subsurface Infiltration.
15. Revision.
16. Infiltration of Water in Feeders and Distributors.
17. Checking of Water in Feeders and Distributors.
18. Mechanism of Irrigation by Infiltration.
19. Advantages of Irrigation by Infiltration.
20. Revision.
21. Soil Dressings (I).
22. Soil Dressings (II).
23. How to Distinguish a Healthy from a Diseased Plant.
24. Insecticides (I).
25. Revision.
26. Insecticides (II).
27. Use of Insecticides.
28. Organization of Picking Operations.
29. Grading, Counting and Weighing.

Document 20

Integrated Development Project, Ghab (Syrian Arab Republic) Table of functional training content and progression of the literacy sessions

The table which follows has been drawn up on the following lines.

Particular months are not specified. Allowance must, in fact, be made for the possible disparity between the ideal agricultural time-table and the actual rainfall pattern which varies fairly markedly from one year to another in the Ghab region. Accordingly, the sowing of sugar-beet and wheat with which the progression commences may be advanced or retarded, according to the date at which there has been sufficient rain. Broadly speaking, we should assume that the first month is roughly October or November and calculate the end of the cycle by reckoning from that date.

The table shows seven months of four weeks each for the 'complete' functional literacy sessions, i.e. twenty-eight weeks. In the light of what was said in the preceding paragraph, we therefore calculate the end of the 'complete' course to fall in April or May. It has been estimated that this period is sufficient, on the basis of twenty two-hour sessions each month (280 hours), to attain adequate reading and writing skill.

From May or June onwards, the sessions assume a different aspect and it is impossible to determine their content in advance.

Whereas during the preceding twenty-eight weeks the whole emphasis was on classroom studies, from May to September (or June to October) the work is done almost entirely on the land, at the rate of one or two sessions per week; all is directed to practical agricultural training, no longer with the aid of textbooks dealing with activities in calendar order, but with booklets of a monographic character containing the elements learnt since the preceding autumn and amplified on the technical plane.

PROGRAMME AND PROGRESSION OF THE INITIAL COURSE (COMMON TO ALL AGRICULTURAL WORKERS IN THE REGION)

FIRST MONTH

First sequence

1. Why Grow Beet?
2. The Sugar-beet.
3. Beet Seed (Monembryonic and Polyembryonic).
4. Cultivation of Beetroot.
5. Revision.

Second sequence

1. Metric Measures.
2. The Right Soil for Beet-growing (I).
3. The Right Soil for Beet-growing (II).
4. National Currency.
5. Revision.

Third sequence

1. Nutriment of the Sugar-beet.
2. Fertilization in General.
3. Fertilization of Sugar-beet.
4. Wheat in the Ghab Region.
5. The Right Soil for Wheat-growing.

Fourth sequence
1. Sowing of Wheat.
2. Fertilization of Wheat.
3. Fertilizers in Wheat-growing.
4. Profits from Wheat-growing.
5. Water in Crop-growing.

SECOND MONTH

First sequence
1. Lucerne.
2. Sowing of Lucerne.
3. Fertilization of Lucerne.
4. Irrigation of Lucerne.
5. Lucerne Products.

Second sequence
1. Problem of Lucerne-growing.
2. Seasons in the Agricultural Year.
3. Livestock in the Ghab Region.
4. Types of Livestock.
5. Advantages of Good Livestock Strains.

Third sequence
Devoted entirely to Animal Husbandry.

Fourth sequence
1. Animal Husbandry (I).
2. Animal Husbandry (II).
3. Animal Husbandry (III).
4. Sugar-beet: Thinning Out.
5. Sugar-beet: Weeding.

THIRD MONTH

First sequence
1. Sugar-beet: Irrigation.
2. Sugar-beet: Losses and Problems.
3. Sugar-beet: Harvesting and Topping.
4. Sugar-beet: Marketing.
5. Revision.

Second sequence
1. Potatoes—Importance in the Ghab Region and in the Syrian Arab Republic.
2. Varieties of Potatoes.
3. Essential Conditions for Potato-growing.
4. Preparation of the Soil.
5. Planting.

Third sequence
1. Fertilization of Potatoes.
2. Thinning Out and Second Dressing.
3. Irrigation.
4. Pests and Diseases.
5. Harvesting.

Fourth sequence
1. Onions—their Economic Importance.
2. Varieties of Onions.
3. Preparation of Soil.
4. Cultivation of Onions (I).
5. Cultivation of onions (II).

FOURTH MONTH

First sequence
1. Fertilization of Onions.
2. Special Treatments for Onions; Irrigation and Weeding.
3. Special Problems of Onion-cultivation.
4. Harvesting.
5. Revision.

Second sequence
1. Co-operatives—Importance and Advantages (I).
2. Co-operatives—Importance and Advantages (II).
3. Co-operatives—Importance and Advantages (III).
4. Importance of the Individual Role of the Co-operative Member (I).
5. Importance of the Individual Role of the Co-operative Member (II).

Third sequence
1. Co-operatives and Credit—Advantages.
2. Means of Employing Credit.
3. Organization of Budgets.
4. Recapitulation of Principles of Co-operatives and Agricultural Credit Financing (I).
5. Recapitulation of Principles of Co-operatives and Agricultural Credit Financing (II).

Fourth sequence
1. Sowing of Wheat.
2. Fertilization of Wheat.

3. Pests; Problems.
4. Harvesting.
5. Revision.

FIFTH MONTH

First sequence
Summer Vegetables.

Second sequence
Mechanization in Agriculture.

Third sequence
Poultry.

Fourth sequence
Civic, Social and Health Problems.

SIXTH MONTH

First sequence
Cotton.

Second sequence
Cotton.

Third sequence
Maize.

Fourth sequence
1. Ground-nuts (I).
2. Ground-nuts (II).
3. Sunflowers (I).
4. Sunflowers (II).
5. Sesame.

SEVENTH MONTH

First sequence
1. General Agriculture: Irrigation.
2. Drainage.
3. Fertilizing.
4. Soil Management.
5. General Operations.

Second sequence
1. General Agriculture: Crop-rotation, Advantages of (I).
2. General Agriculture: Crop-rotation, Advantages of (II).
3. Practical Examples of Crop-rotation (I).
4. Practical Examples of Crop-rotation (II).
5. Practical Examples of Crop-rotation (III).

Third sequence
1. New Crops for the Future: Castor-oil Plant.
2. New Crops for the Future: Soya Beans.
3. Health Problems (I).
4. Health Problems (II).
5. Health Problems (III).

Fourth sequence
General recapitulation of knowledge acquired in a cycle of the 'complete' type.

Continuation of the programme in a deliberately practical from, conforming exactly to the pattern of work in the field may be carried out during the eighth, ninth, tenth and (possibly) eleventh months.

Document 21

Functional Literacy Project, Eṣfahān (Iran)
Plant protection: curriculum outline stage I

SMUT ON WHEAT

1. Smut on wheat

Group discussion about plant diseases.
One of the worst in wheat is smut.
Smut.
Seresan.
Seresan can be used to prevent smut.
Need to keep record of expenses.

2. How smut is spread

Review. Introduction to new topic. What the students know.
The cause of smut.
How smut is spread.
Where smut is spread.
Repetition.

3. What is smut?

Review. Introduction to new topic. What the students know.
The colour of smut.
What smut is. Difference between smut and brand.
Repetition.

4. Kill the smut with Seresan

Review. Introduction to new topic. What the students know.
What is Seresan?
How Seresan kills the smut.
Repetition.

5. Frequency of smut and preventive measures

Review. Introduction to new topic. What the students know.
Damage caused by smut and how wheat becomes infected.
Frequency of smut and how to prevent smut.
How to impregnate seed. Mixing seed with Seresan.
When to impregnate and necessary precautions.
Costs of impregnation.
Repetition.

DIFFERENT ENEMIES OF CROPS

1. How to control rats and mice

Review. Introduction to new topic. What the students know.
Rats and mice from the economic and social point of view.
How to control mice.
How to prepare poisoned bait for store mice.
How to prepare poisoned bait for house mice.
Repetition.

2. Introduction to plant pests

Review. Introduction to plant pests. What the students know.
Different enemies of plants.
How to protect the crops.

3. Life cycle of insects

Review. Introduction to new topic. What the students know.
Egg, larva, chrysalis and adult insect.
Study and discuss posters of flies' and mosquitoes' cycles.
Study and discuss posters of butterflies', moths' and beatles' cycles.
Repetition.

4. Principles of chemical control

Review. Introduction to new topic. What the students know.
What is chemical control of insects and diseases.
How to use the chemicals and precautions.
Repetition.

PREVENTIVE MEASURES

1. Criteria of good seed

Review. Introduction to new topic. What the students know.
Attributes of good seed.
Importance of healthy seed.
Where to get good seed.
Repetition.

2. Importance of crop-rotation for healthy crops

Review. Introduction to new topic. What the students know.
Connexion between crop-rotation and plant pests.
Other reasons to rotate crops.
Importance of pre-crops.
Repetition.

3. Provide for a healthy potato crop this year

Review. Introduction to new topic. What the students know.
The causes of potato pests.
Conditions for a good crop.
Sprouting in advance.
Cutting of seed potatoes.
Repetition.

4. Present crop rotation and possible changes

Review. Introduction to new topic. What the students know.
The present crop-rotation mere chance.
New crop-rotations to be recommended.
Repetition.

HIGHER KINDS OF HARMFUL ANIMALS

1. Crows and how to control them

Review. Introduction to new topic. What the students know.
Crows and crow control.
Bird-scarers.
Repetition.

2. Rabbits and porcupines and their control

Review. Introduction to new topic. What the students know.
Rabbits and how to control them.
Porcupines and how to control them.
Repetition.

SPRAYING

1. Precautions during spraying

Review. Introduction to new topic. What the students know.
How poisonous insecticides and pesticides are used.
The meaning of 'Directions for Use'.
How to protect oneself when spraying.
How to store chemicals.
What to do with 'leftovers' and how to treat cases of poisoning.
Repetition.

2. Sprayers and how to keep and clean them

Review. Introduction to new topic. What the students know.
Sprayers and how they work.
How to use the sprayers and how to clean them.
Repetition.

CHEMICAL TREATMENT OF PESTS

1. When weevils or aphids appear in alfalfa or clover, spray with Gamexan for weevils and DDVP or Malathian for aphids in the months of Farvardin or Ordibehesht

Review. Introduction to new topic. What the students know.
Aphids and weevils.
How to control these insects.
Group discussion about aphids and weevils and their control.
Repetition.

2. Treat the soil with aldrin before planting onions or cucumbers (rootfly)

Review. Introduction to new topic. What the students know.
The rootfly.
How to control the rootfly in the soil.
How to control the rootfly when it appears.
Repetition.

3. Spray sugar-beet against fleas and weevils (Sarchortomi) late in the month of Farvardin with Cotinexplas sp.

Review. Introduction to new topic. What the students know.
The life of the flea.
The life of the weevil.
How to control these insects.
Repetition.

4. Spray sugar beet against aphids (beet mosaic) with Metasistox or Dimetoat

Review. Introduction to new topic. What the students know.
Symptoms of beet mosaic.
How the beet mosaic is spread.
How to control beet mosaic.
Repetition.

5. If thrips appear in onion, potato, tomato or cucumber it is time to spray with Malathion or Diazinon. Useful also against aphids

Review. Introduction to new topic. What the students know.
The thrips.
How to control thrips.
Repetition.

6. Sugar beet should have two sprayings with Sevin or Dipterex, one in the month of Ordibehesht and one in Khordad against Caradrina exigua

Review. Introduction to new topic. What the students know.
Description of Caradrina.
How to control Caradrina.
The leaves are poisonous after spraying.
Repetition.

7. In the month of Ordibehesht and Khordad, wheat and barley could be attacked by Eurigaster and aphids. Spray Dipterex for Eurigaster and Malathion or Diazinon for aphids

Review. Introduction to new topic. What the students know.
Description of *Eurigaster integriceps*.
Control of Eurigaster.
Aphids and their control.
Repetition.

8. Watch the potatoes. Sick plants should be dug up and brought away from the field. Early blight should be combated with Maneb or other

Review. Introduction to new topic. What the students know.
Sensitivity of potatoes to diseases.
Removing of sick plants.
Spraying against fungus diseases.
Repetition.

9. Aphids as transmitters of virus diseases

Review. Introduction to new topic. What the students know.

Virus diseases in general.
How the aphids transmit virus.
The role of weeds as carriers of virus.
Repetition.

10. Tobacco mosaic virus in tomatoes spread by smokers

Review. Introduction to new topic. What the students know.
The tobacco mosaic virus.
The role of smokers in transmitting it.
Repetition.

WEEDS AND WEED CONTROL

1. Weeds

Review. Introduction to new topic. What the students know.
What weeds are.
Why weeds reduce the crop yield.
Influence of weeds on the quality of the crop.
Weeds as host plants for plant pests.
Repetition.

2. How to control weeds

Review. Introduction to new topic. What the students know.
Measures to be taken in advance in order to control weeds.
Mechanical control of weeds.
Chemical control of weeds.

3. Cuscuta in Alfalfa and clover

Review. Introduction to new topic. What the students know.
What cuscuta is.
Why it is harmful to crops.
How to control it.
Repetition.

CONTROL OF VERMIN DURING THE SUMMER

1. The peaweevils, leafhoppers and aphids on pod-plants

Review. Introduction to new topic. What the students know.
The peaweevil and its control.
Leafhoppers and their control.
Aphids and their control.
Repetition.

2. Mites on different summer crops, e.g. cotton beans, blackeye bean, potato, strawberry

Review. Introduction to new topic. What the students know.
What mites are.
When and how they appear.
How to control them.
Repetition.

3. The mole cricket

Review. Introduction to new topic. What the students know.
What the mole cricket is.
Why it is so harmful.
How to control it.
Repetition.

Chapter 6

Elaboration of pedagogical methods and machinery

With the programmes and content established and the progressions prepared, the next step is to develop the instructional methods and machinery necessary to the training operation itself. The latter is based on fundamental principles which steer a progressive and comprehensive evolution towards the objectives.

Within the framework of this general educational operation, special pedagogical methods are employed as regards, first, the actual learning processes and, second, the style of training, i.e. the teacher/learner pedagogical relationship.[1]

A. Bases and underlying principles of the pedagogical approach in functional literacy work

BASES OF THE PEDAGOGICAL APPROACH

Psychological bases

We are still very much at a tentative stage regarding the psychology of adult illiterates.[2] For this reason it would seem to be very definitely advisable to enlist, whenever possible, the services of a psychologist, if not a qualified educational psychologist, to study the psychological aspects of the population in question and of the various 'learnings' which a functional literacy programme comprises.

1. See Chapter 7, below.
2. See Chapter 2, Section B, above.

The multiplication and synthesis of such case-studies would enable identification of the characteristics common to adult illiterates, and a solid grounding of psychological bases for the pedagogy of functional literacy.

Ecological bases

One of the major weaknesses of traditional school pedagogy comes of the fact that it has often considered the child in isolation, thus neglecting the importance of the social environment and of the class's psycho-sociological field.

Despite lacunae which are still considerable, the pedagogics of functional literacy training present the characteristics of a socio-pedagogy in constant relation to its environment; this is a situational pedagogics. It considers persons not as individuals in themselves, but as individuals: (a) belonging to a social group whose collective manners of thinking, feeling and acting they share; (b) with a personal history which gives them, in their social, occupational and family *milieu*, status, roles and functions; and (c) having at all times problems to resolve and needs to satisfy.

See Document 1, page 31

This group membership and these personal-history factors are inevitably decisive in determining the attitudes and motivations of the individuals concerned in regard to functional literacy.

Due weight should accordingly be given to the sociological and psycho-sociological aspects of the socio-economic *milieu* in which one wishes to launch a functional literacy operation. A few examples will demonstrate the importance of the interactions resulting from relations among members of the group and from the play of the sociological forces.

At the time of launching a functional literacy operation in a region of Mexico, it came to light that a masked conflict situation existed between the peasants and the agricultural credit organization which happened to have an important directing role in the production activities. Failure to take this psychological situation into account would have been a serious risk and would have led to inevitable absenteeism.

In Befandriana (Madagascar) no action is possible among the village communities unless it is introduced via the traditional authorities and accepted by them.

The functional literacy group itself must be considered as a group

in which the traditional teacher/pupil pedagogical relationship must leave room for more complex group activities, in a much more permissive climate.[1]

Finally, in functional literacy action an effort should always be made to adjust the training activities both to the technico-economic problems and socio-cultural realities of the *milieu*, and to the individual characteristics of the subjects. This adjustment constitutes the major 'ecological' characteristic of the functional approach in literacy work. Even if, for one reason or another, it cannot be achieved in a completely satisfactory way, it should remain the essential objective which should never be forgotten.

BASIC PRINCIPLES OF THE PEDAGOGICAL APPROACH

Principle of convergence

Every problem must be studied from all its various angles with the knowledge necessary for understanding it converging towards the focal point it represents (see Fig. 4).

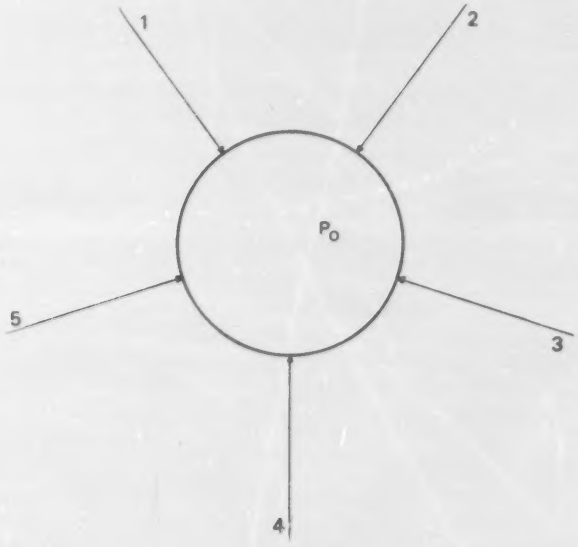


Figure 4. The principle of convergence.

1. See Chapter 7, below.

The practical problem, *P*, requires, for its solution, information from angles 1, 2, 3, 4, 5 and so on—the nature, volume and combination of the data varying with the nature of the problem. The problem should be dealt with from its technical, scientific, socio-economic and mathematical angles. Reading instruction should convey notions with a bearing on this problem.

By way of illustration, a learning of the 'preparation of the rice seed-bed' operation comprises the following elements: learning the necessary physical procedures; technical and scientific explanation of the operation; study of its economic aspects (yield, etc.); 'mathematicization' of the situation—discovery and solution of the problems entering into the situation (measurement of the surface, calculation of weight of fertilizer, etc.); vehicular reading.

To achieve the training objectives it becomes necessary, following the accepted pedagogical progressions, to resolve the problems which investigatory analysis of the *milieu* has been able to identify.

The pedagogical methods to be employed must be conceived as methods for the study of the problems. It is by and through this study that the acquisition of knowledge and the training of subjects is effected. The problems thus emerge as the essential centre of interest.

Whether the problem is technical, socio-economic or concerns the learning of communication symbols (alphabetical, mathematical, graphic, etc.), the groups of illiterates concerned must be trained to take hold of it, and study it in order to solve it.[1]

The process must comprise two fundamental phases—the study phase proper and the action stage—in both of which literacy training and elementary mathematics should be incorporated.

Study of the problem. The first stage should be devoted to stating the problem at the level of the participants' conscious understanding so that they may grasp it accurately. It should therefore be set out in the form of precise questions.

The second stage should comprise the descriptive and explanatory analysis of the data of the problem, the utilization of the notions already known and the acquiring of new knowledge.

The instructor/organizer provides, as required, the information necessary for the understanding of the problem (practical, technical, scientific, economic). Thus the stage at which the problem is discussed

1. See Chapter 7, below.

becomes the learning stage *par excellence*. It is the crucial point in the learning process since, if the problem corresponds to the needs that are really felt, participants will be in a receptive state, highly favourable to the training process.

The third stage should lead the group to put forward one or more solutions to the problem studied.

Action phase. At this point, it is a matter of making a decision and applying it.

This phase should lead to the adoption of new behaviour patterns, either immediately or after a period of indecision and groping of variable length. In effect, it should not be forgotten that the action phase comes up against inevitable resistance to change, particularly when the new ideas do not fall into line with the values accepted in the group.

The problem and written communication. This phase entails an introduction to communication symbols (reading, writing, figurative representations) and mathematical language.

The study of the problem must afford an occasion for learning the symbols of written language and of mathematical language and, in regard to the latter, for assimilating the reasoning behind it. In developing the subjects' powers of communication and aptitude for mathematical reasoning, the problem data and the information relating thereto should be used.

In this way the process of learning to read, write and calculate acquires practical and direct significance in everyday experience: it promotes the retention of knowledge relating to the problem to be solved, while preparing the subjects for access to the written collective 'memory bank' (books, newspapers, texts of various kinds) and facilitating the acquisition of new thought patterns which enable the individual to understand better the problems and to achieve more effective action.

The convergence of the various elements of response to the questions posed by the problem entails the integration of the training activities themselves; it excludes compartmentalization and the fragmentation of courses into separate 'disciplines' or 'subjects', as well as the diffuseness which characterizes traditional formal education. The problem, therefore, amounts to a global subject, whose solution is facilitated by global interdisciplinary activities.

Principle of integration

Integration of curricula with the activities of the milieu. In addition to securing a means of communication, an essential task of functional literacy is to train individuals to be better able to discharge their economic and social responsibilities. This training is given through work itself and within the occupational context.

It is for this reason that functional literacy programme curricula generally comprise two kinds of activities: practical on-the-job training activities (model plots, workshops, yards, etc.), and theoretical training, in the classroom, comprising technical and scientific instruction, elements of socio-economics, functional arithmetic, oral expression (mental vivification) and written expression (literacy training).

Theoretical activities and practical training are integrated with each other to the extent that they contribute to developing the same problem themes.

In actual practice, the operative modes of this integration are markedly adventitious in character. They are subject to the imperatives of production, the climatic conditions, the organization of the work, and so on.

Several forms of integration can thus be distinguished. In the agricultural *milieu*, practical activities and theoretical instruction can be organized within the framework of a single work unit. For example, the question of rice transplanting will be studied in its practical aspects in the field (practical demonstrations, visits to control plots, etc.), and in its theoretical aspects (theoretical occupational training, technical scientific instruction, socio-economic instruction) in the classroom.

According to the situation, the theoretical training sessions may precede or follow the practical classes, but they must always be organized within the context of the actual farming operations, as laid down in the agricultural calendar.

See Document 22, page 112

Under certain circumstances, the theoretical and practical activities respectively are staggered by blocks.

Document 22 provides a good example of this alternation.

In an industrial *milieu*, staggering, as illustrated in the foregoing example, is not necessary. The various programme activities should be integrated among themselves in the context of the work units' performance.

See Document 23, page 113

Document 23 shows how this approach is put into effect.

Integration of literacy action with the other training components. Figure 5, inspired by the principles of modern information theory and cybernetic control, helps us to understand how the literacy instruction proper is integrated with the practical and theoretical training. As can be seen, the message embraces the totality of the theoretical and practical information to be utilized in solving a given problem, in the frame of reference of a training action which is subject to continuous correction.[1] The channels through which the message is transmitted are, alternatively, the symbols of spoken language symbols (words), or of written language, or 'doing' (demonstrations, practical training). These three forms of communication interfere and combine in different fashions according to the situation.

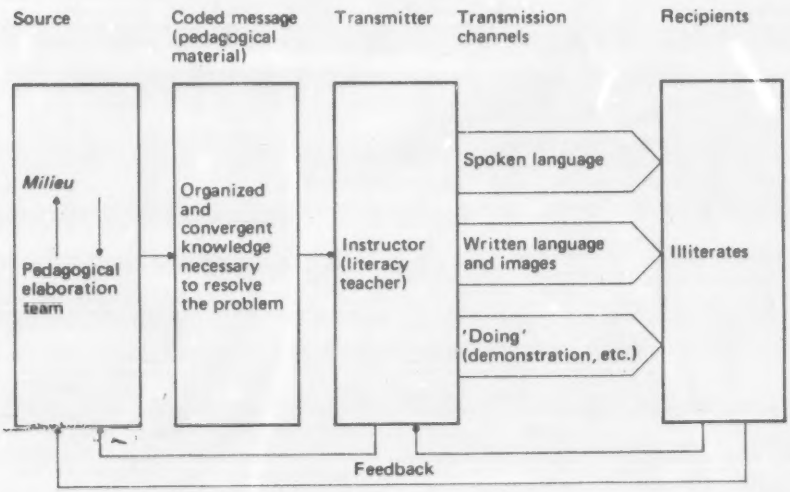


Figure 5. Communication and regulation of the training action in functional literacy operations.

The written language uses appropriate symbols—alphabetical, mathematical, graphic (pictures, drawings, diagrams, and so on). It is within the context of communication that the learning of these symbols, i.e. the real literacy operation, takes place. As we can see, training and literacy action are not merely synchronized, but integrated through the communication role of the symbolism.

1. See Chapter 7, below.

The principle of globality

It is not necessary to labour the fact that emerges from every aspect of our subject so far discussed—that functional literacy is a global training enterprise. To take an active part in development, the individual is invited to acquire theoretical and practical knowledge and to expand his mental powers and ability to communicate, by acquiring a mastery of the symbolic function of language.

The principle of diversification

Functional literacy operations are characterized by a necessary differentiation of their progressions and content, from the very fact of the extreme diversity of the situations and problems. This diversification is, in a way, in the nature of things. It is the obvious corollary of the problems-oriented approach.

The principle of participation

Figure 5, which illustrates the communication process in functional literacy, shows that the message is constantly being modified by the effects of feedback. Communication is not unilateral—it constitutes an exchange in a context of active participation by all the individuals involved.[1]

This figure thus underscores the importance of participation of all the elements involved in the elaboration and propagation of the programmes and in their constant adjustment to the needs and problems (see the following section).

B. Special pedagogy

PRELIMINARY CONSIDERATIONS

The principles set out above enable us to formulate the special pedagogic methods which in their turn will determine the nature and form of the pedagogical material to be elaborated.

1. See Chapter 7, below.

General principles for the elaboration of the pedagogical material

Three kinds of pedagogical material can be distinguished: material for the instructor's use; material for the illiterate; material for collective use.

The global approach and the sequence-based approach. Determining the pedagogical material for functional literacy training can be tackled in a variety of fashions. In the light of experience, two basic approaches in this connexion can be mentioned:

The global approach. This approach consists in preparing a complete set of pedagogic tools for functional literacy (readers, arithmetic manuals, placards, instructors' guides) and then dividing and subdividing the matter they convey into monthly, weekly and daily assignments. These instruments are then tested and reproduced in a corrected version.

See Document 18, page 81

The sequence-based approach. The determination and testing of the didactic material are effected by stages. The instructional content is divided into sequences, generally weekly, which are subordinated to the actual activities of the populations.

See Documents 19–21 pages 82–9

The didactic material is presented in the form of cards and placards, and the precaution is taken of having a sufficient stock of cards before the functional literacy operations are launched. The cards and placards are tried out as they are produced, and the data obtained from this experimentation are used in improving progressions, sequences and material under preparation.

At the end of the experimental process (its duration generally corresponds, in the agricultural environment, to that of the crop cycle), the various cards are assembled in files, booklets and guides; more copies of these can be turned out if extension of the functional literacy operations is necessary.

The principle of adaptation. The material must be adapted to the factors conditioning the operation, i.e.: to the pedagogic method utilized; to the occupational profile of the instructor; to the intellectual profile of the adult illiterates.

Adaptation to the pedagogic method utilized. The material should not only provide the instructor with a didactic instrument and with information concerning the topic to be dealt with, but also—and essentially—with a pedagogic approach; it must facilitate the understanding and pursuit of the pedagogical method advocated and thus serve for the training of the instructors.

Adaptation to the occupational profile of the instructor. It is necessary to know the socio-occupational background of the instructors, their cultural level and their technical and/or pedagogic training in order to produce 'self-teaching' pedagogical material adapted to their profiles.

The material should provide them with *reference information* (this information is normally presented, particularly in regard to technical, vocational, social and economic instruction, in the form of cards or manuals; it provides the instructor with the knowledge he needs for mastery of his subject) and a *pedagogic approach* (the teaching card or the corresponding manual section must carefully detail the methods to be applied for each work session).

Adaptation to the intellectual profile of the adult illiterates: adaptation to individual and collective representations. The solution of a problem calls for the utilization of familiar notions, to which the teacher links the new notions to be acquired. It is a matter of starting from the known, to work towards the perception of new relationships.

Adult illiterates have their own experience of life and their own representations, i.e. their way of understanding and explaining problems and the phenomena relating to them. A knowledge of the explanatory models as each problem is studied is always important so as to be able to correct erroneous ideas in full knowledge of them.

Adaptation to the intellectual profile of the adult illiterates: adjustment to the perceptive abilities of the individuals. There is another aspect which requires careful attention: that of perception of graphic material (illustrations of various kinds, diagrams, drawings, and so on). It is important to study the perceptive ability of the population concerned so that due allowance may be made for it in preparing the visual pedagogical material (placards, slides, etc.).

See Document 2, page 36

The education of the perceptive faculties will have to be founded on a progression from the best-recognized to the least-recognized elements. If it is noticed, for example, that action is more readily grasped than perspective or abstract representations, care should be taken during the familiarization stage to see that the illustrations and designs used as teaching aids represent actions at the outset. The documents provided below show how the problem has been tackled on a pragmatic basis.[1]

See Document 25, page 118

See Documents 24–5, pages 114–21

1. Research to find out more concerning the problem of the recognition of pictures by adult illiterates has been envisaged.

SPECIAL DIDACTIC METHODS

Methods of basic technico-occupational and socio-economic instruction

Practical activities in an agricultural milieu. These activities mainly take the form of demonstrations, two kinds of which can be used to initiate subjects in a new method or a new technique.

Method demonstration. This is a matter of showing how a certain job is carried out and why it is done that way. The demonstration should promote a discussion whereby individuals' representations can be discovered and the required answers given to the questions they put while, at the same time, inciting them to try it themselves with a view to mastering the new procedure.

Demonstration by results. Peasants visit the demonstration areas and compare the results obtained with those of a control plot. Results of the experiment should be conclusive in themselves in inciting the peasants to adopt the innovations suggested.

Demonstrations must obviously be planned and prepared in the context of peasants' actual work. According to the circumstances, these can hinge on the activities of an experimental station run by a technical service, an agricultural school, etc., or on what has been done in demonstration fields belonging to peasants receptive to innovation. Other possibilities are training-courses for peasants or the provision of technical assistance in the form of a network of qualified agricultural agents.

Practical activities in an industrial milieu. In especially favourable cases, the firms concerned have a training-shop with the appropriate equipment, and the services of a literacy instructor/technician who is able to direct both the practical activities and the technical courses.

The training programme, divided into study units, proceeds by the integrated approach outlined above. The practical work leads up to mechanical drawing, technical acculturation, arithmetic, socio-economic problems and literacy training. In the great majority of cases, training is carried out at the place of work, with its qualified technicians giving the necessary demonstrations and helping in the acquisition of the necessary manual skills.

Theoretical training activities in the classroom. According to circumstances these either precede or follow on from the practical activities,

and aim at as thorough an analysis as possible of the problem being dealt with in all its different aspects.[1]

This will not stop at questions of an analytical order (the who, what, where, when, how much and how) but, at the right moment, the heuristic question why will be posed.

The link between the practical and the theoretical activities will need to be provided by the content of the problem theme and by appropriate didactic aids.

Audio-visual media (posters, slides and, if local facilities allow, film, radio and television) should be used to ensure the mental link-up of the practical training activities on the job and the classroom instruction. Placards, for example, should not be regarded as mere illustrations, but as symbolic representations of the problem and its solution; they need to contribute positively to the study of the problem and also to help towards the acquisition of the graphic communication symbols. To decipher figured representations (drawings, diagrams, sketches) and express oneself with them helps towards the conceptual and perceptual education of the individual.[2]

See Document 24 (Posters 1 and 2), page 114. See also Documents 28 and 34, pages 125 and 144

The order in which the practical and theoretical aspects of the problem are tackled will depend on the problem's nature and on the circumstances. Figure 6 provides an illustration of this.

See Documents 26–32, pages 122–41

Application of technico-occupational and socio-economic training methods. A few examples of demonstrations which illustrate the application of these methods follow. They should not, however, be regarded as models in view of the difficult conditions in which they were carried out.

Methods of teaching reading

Some basic data. There is a difference of opinion regarding methods of teaching reading concerning which it is pointless to take sides.

Studies and research on the development of the reading capacity of persons able to read have highlighted the following facts:

The reader's eye perceives only the shape of each word. In other words, according to *gestalt* theory, which teaches that the 'whole' is

1. See 'Study of the Problem' in Section A, above.
2. See Figure 3, above.

Figure 6. Problem-solving.

perceived before the 'parts', the word is recognized in its global form without letter-by-letter identification by the reader.

There is a difference between oral and silent reading. The speed of oral reading is approximately 9,000 words per hour; it is 13,000 words if the words are whispered. Depending on his training, a silent reader can read from 20,000 to 60,000 words per hour.

For a reader with normal sight the dimensions and shapes of the characters have no effect on reading speed, understanding and memorization.

The reading act involves visual and mental processes.

Teaching methods and techniques.[1] The teaching of reading should aim, at the outset, at developing the ideo-visual aspect, i.e. ability to perceive symbols and their meaning simultaneously.

This objective involves two consequences as regards teaching methods and techniques:

The requirement that the reading lessons have meaning; from the outset reading material must be vehicular. The exercises conveying no meaning should therefore be limited.

The need to apply the global method of teaching reading; the 'whole' (word) will be learned before the 'part' (letter), the acquisition of the mechanics of reading taking place within the context of the central understanding processes of comprehension and assimilation of the messages written in connexion with the problems being handled.

Figure 7, which is the complement to Figure 5,[2] shows this process.

Working from the word to the syllable and then to the letter may be done either within a single lesson, or by successive steps.

Word breakdown in a single lesson. The classic procedure is as follows:

Sentence → word(s) → syllables → letter → syllables → word(s) → sentence.

See Documents 35–6, pages 145–6

Examples of the practical application of this procedure will be found in documents below.

Deferred word breakdown. Adult illiterates acquire, initially by the global method, a certain number of words which they find in contexts of increasing variety. As they progress they are shown how to make comparisons and draw parallels leading them on to identify like elements (syllables, letters) which will be used for training in the reading of syllables or words containing identical elements.

1. For a detailed treatment of teaching methods and techniques, the reader is referred to: William S. Gray, *The Teaching of Reading and Writing: An International Survey*, 2nd ed., Paris, Unesco, 1969 (Monographs on Fundamental Education, X).
2. See Section A, above.

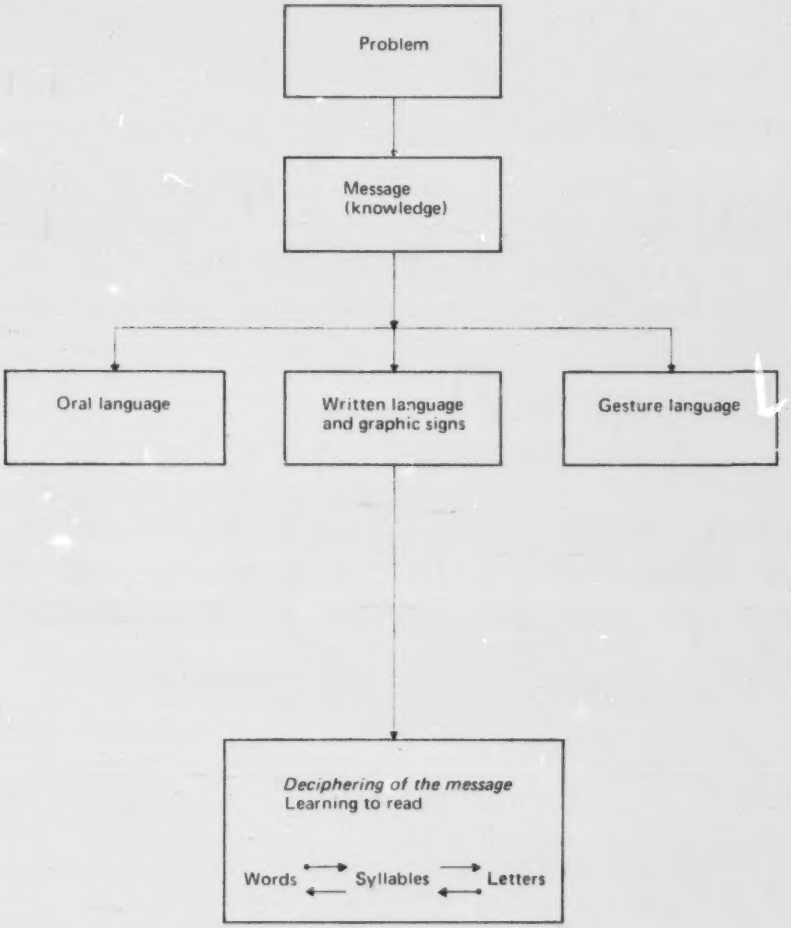


Figure 7. Vehicular reading.

Examples given below set out the first four reading lessons with the 'cotton' syllabary, prepared for the work-oriented adult-literacy pilot project in Tanzania.

See Documents 37–40, pages 147–50

With the fourth lesson (Somo la 4) they get to the breakdown of the words studied on 'see-and-say' lines in the previous three lessons. It should be noted that the study of one lesson may require several sittings.

See Document 19, page 82

Whatever the system adopted, acquiring the mechanics of reading can be facilitated by active procedures.

Active procedures which can aid the acquisition of the mechanics of reading. These include the following two types of exercises:

Exercises on words learned by the global method (collective and/or individual cards):

- Mix the cards and reconstruct a model text.
- Mix the cards and find those with the words asked for.
- Find and group the words containing the same sounds, the same syllables.
- Find the missing syllable in a word.
- Make up new sentences with the words available.

Exercises on syllables (collective and/or individual cards):

- Mix the cards and reconstruct the words and sentences indicated.
- Group the syllables with analogous elements (syllabic families).
- Make up sentences and new words with the syllables available, etc.

Various devices can be thought up in order to facilitate the handling and display of the collective cards.

Teaching material for reading. Teaching material for reading may be divided into instructor's material, the illiterate's material and 'class' material, as follows:

Instructor's material. This consists essentially of a manual or cards giving the instructor the necessary teaching hints and setting out the stages of the methodological development of each lesson.

The illiterate's material. This can be in the form either of cards or of booklets. The reading text and illustrations should be relevant to the problem being studied so that the process of learning to read consists in acquiring or rediscovering knowledge bearing on this problem. An illustration of this teaching principle is provided in documents below.

See Documents 35–41, pages 145–52

Class material. This material, which will vary according to local production facilities, may comprise placards, collective cards (sentences, words, syllables, letters) and individual cards.

The teaching of writing [1]

Learning to write cannot be treated as an independent subject. It must fit into the over-all activity of training and the acquisition of graphic symbols. The study of a problem must afford an occasion for the expression of the ideas involved by drawing and normal writing, with acquisition of the manual technique of writing as a concomitant of this. The process of learning to write should, therefore, be synchronized with that of learning to read.

From the outset, attention should be concentrated on whole words, moving as the training progresses to exercises in comparison of the forms of letters, introduced in order to facilitate training in graphic expression and the development of manual dexterity.

A variety of expedients (use of 'truncated' letters, forming letters in different materials, etc.) should be used for this purpose.

Introduction to mathematics

Purpose of instruction in arithmetic. The adult illiterate, contending with life's problems—particularly those connected with his job—will not be satisfied with 'working for nothing' as regards learning arithmetic.

From the outset, arithmetic must be for him a tool with a place and a meaning in his personal activities.

It is by and for the solution of his problems—with the help that the practice of arithmetic will afford him in this domain—that the illiterate will achieve logical reasoning.

Method of introduction. Two aspects here are the particular situation found to be a primary consideration and functional seriation of the teaching of arithmetic.

The particular situation found to be a primary consideration. Adult illiterates know how to count on an empirical basis, using counting systems which vary from one cultural *milieu* to another. This empirical knowledge should, therefore, be taken into account, and the teaching of arithmetic based on the 'mathematicization' of the situation-problem actually encountered. This facilitates the passage from the concrete operation to its symbolic translation.

Let us look at the practical problem presented by the preparation

1. See Gray, op. cit.

of rice seed-beds in the Befandriana region of Madagascar. Following the advice of the technicians, the peasant is required to prepare seed-beds measuring ten metres by two metres, for which purpose he must trace parallel lines, measure the dimensions of the seed-bed and use the appropriate measuring instruments. The seedling from a bed this size will serve for planting a twenty-are paddy field. The peasant must, therefore, be familiar with the notion of surface and know how to mark out his field and calculate its area.

He must in addition, know how to tell the date so as to conform to the agricultural calendar.

His study of functional arithmetic must therefore equip him to:

Read concrete or abstract numbers: ten metres, two metres, twenty ares, 15 May, 20 July (dates marking the favourable period for rice transplanting).

Trace parallel lines and rectangles.

Grasp the notion of area.

Calculate areas in square metres and ares.

The data must be processed mathematically for the peasant to be able to understand and resolve the practical problem presented by the preparation of an improved seed-bed.

The development of the individual's conceptual thinking, particularly in regard to the concept of relation, which is so important in mathematics, thus takes place in the context of the actual operation.

Functional seriation of the teaching of arithmetic. The seriation of the introduction to mathematics needs to be integrated with the 'chain' of the problems to be solved. It thus bears a relation to each 'chain' of problems, i.e. each specific situation.

The seriation comprises: study of numeration; study of mathematical operations; recognition and tracing of simple geometrical figures; measurements:

Study of numeration. The numbers encountered during the training-sessions will be read and written 'globally' and should figure in the reading texts on the same footing as the words that make up the sentences. Thereafter, the study of numeration can comprise the following stages:

See Documents 35–41, pages 145–52

Global reading and writing of numbers encountered (10, 17, 25, 150, 6, 18, 9, etc.).

First systematization: learning of numbers from 1 to 10, notion of ten.

Second systematization: the 'tens'.

Third systematization: numbers from 10 to 100.

Fourth systematization: the 'hundreds'.

Study of mathematical operations. The operations to be studied are those bearing on the concrete problems arising which relate especially to measurements.

Example: two kilograms of fertilizer are required per square metre. What weight of fertilizer is necessary to treat the seed-bed? The peasant must calculate the surface area of his seed-bed. The first step is for him to learn, on the spot, how to divide the seed-bed into square metres and then to arrive at the rule to apply for calculating the surface of a rectangle. This involves an introduction to the sign '×' (length × width = 10 × 2 = 20 square metres). The weight of fertilizer required will be: 2 kg × 20 = 40 kg.

The various operations make it possible to study the import of multiplication. They do not present any difficulty as regards the mechanism involved and should be performed mentally.

Throughout the practical action, it will be desirable to study successively the import of the operations (by making the peasant state the operations applicable for a given problem and solve them mentally), and their mechanism (progressing from the easiest to the hardest).

Recognition and tracing of simple geometrical figures. In industrial and agricultural *milieux* alike, this stage in the progression will be determined by the exigencies of the training activities. Recognition and construction of lines, angles, rectangles, squares, circles, etc., will be learned.

Measurements. In the context of the 'chains' of problems of a technico-occupational and socio-economic nature, occasions will arise for mensuration of the most varied kinds: lengths, surfaces, weight, money, time, capacity, temperature, and so on. Mathematical problems and operation techniques relating to measurement should help towards a better understanding of the situations and the problems associated with them.

Instructional material. This should comprise:

For the instructor, cards or a manual setting out the teaching procedure.

For the illiterate (where appropriate), mainly exercise cards; the recognition of geometrical forms will be carried out on the ground (fields, workshops, etc.). According to circumstances, the appropriate concrete material will be used for making measurements, etc.

See Documents 42–4, pages 153–8

Figure 8 shows the methods of integrating the introduction to mathematics with the realities of the *milieu*, to ensure the effectiveness of the action.

TESTING OF TEACHING METHODS AND AIDS

Teaching methods and aids should be tried out prior to their general application.

Object of the tests

The main purpose of carrying out tests is to adapt the pedagogic methods and tools to the actual conditions of the action, i.e.:

To the contents of the programme. The following questions should be asked: Do the pedagogical methods and materials that have been devised facilitate the propagation of the content of the training programme? Do fresh problems arise during the training sessions? What are they?

To the professional profile of the instructor. Does the instructor find the material prepared for his use helpful? Both the substance (content of class sessions) and the form (pedagogic approach) of this material must be evaluated.

To the needs and psychology of the adult illiterates. What do the groups think of the material devised for their use? Do they grasp the

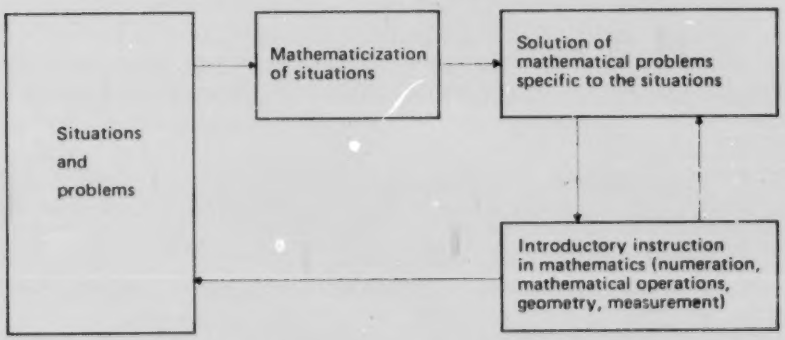


Figure 8. Integration of introductory instruction in mathematics with the realities of the *milieu*.

graphics properly? What suggestions do they put forward for improving teaching methods and tools?

Testing procedures

Guides for the conduct of the tests (observation cards, questionnaires, various tests, and so on) will need to be worked out in the light of the special features of each educational situation.[1]

Utilization of information data resulting from practical tests

The data compiled will be used to improve the content of training programmes and to perfect teaching methods and aids when corrected versions of the materials are produced (if formulated as a whole) or when the work units are given their pedagogical form (in cases where the sequence procedure is employed).

1. See 'General Principles for the Elaboration of the Pedagogic Material', in Section B, above.

Document 22
Functional Literacy Project (Tanzania)

The programme, which deals with cotton-growing, combines six months of instruction, six months of practical work and a further six months of classroom courses.

THE FIRST SIX MONTHS

During the first six months (May–October) trainees attend classes and work with Book I of the elementary reading manual. Posters, exercise cards and the teacher's guide are utilized. Teachers and agricultural extension work-supervisors organize what are termed 'indoor demonstrations' in the classroom. This is no more than a beginning in combining vocational training and literacy instruction.

THE SECOND SIX MONTHS

During the following six months (November–April) courses cannot continue, because the cotton-growing season is at its height and the landworkers are in the fields almost all the time. This is the main reason for breaking off the courses and replacing them by practical work relating to cotton-growing.

For this purpose, each class should have a *class-shamba* (plot of ground). Each stage in the growing of cotton, as described in the elementary reading manual, should be demonstrated by literacy instructors or by the agricultural extension specialists.

In 1969, when there were approximately 200 literacy classes, the agricultural extension specialists were able to take charge of this practical instruction. Now (1970) that the number of classes is nearing 1,500, we may well wonder whether the agricultural extension workers have barely time enough to teach the literacy supervisors to direct the practical work themselves, and to supervise their efforts. Literacy instructors and agricultural extension specialists have a special guide showing them how to conduct the practical work, plus brochures describing certain specific operations which are distributed to those involved (not only the future literates, but other members of the community as well). It is only when all this is in place that it will be possible to affirm that the occupational training and literacy work are really integrated.

THE LAST SIX MONTHS

During the final six months the classes start up again. The second-year programme differs from that of the preceding year. It covers considerable ground in arithmetic and includes several complementary short-term courses dealing with hygiene, co-operatives, budgeting, housing, civics, etc., which are presented in narrative form on flannel-boards, flash cards and charts.

Document 23

Functional Literacy Experiment, Valedo Rio Doce (Brazil)

As part of the weekly time-table, a special session is held each Monday to deal with technical problems: a talk on the subject by an engineer and group discussion on the same topic; reading of a drawing, explanation of a dummy, introduction of a new machine, new tooling, etc.

Group discussions enable solutions to be worked out which are then applied in the field, i.e. in the workshop or on the site.

Document 24
Functional Literacy Project (Madagascar)
Tulear Operation
Testing of a series of thirteen posters

TESTING PLAN

The idea was to experiment with thirteen posters designed to serve as visual aids for a set of technico-didactic cards dealing with the improvement of rice cultivation. Their themes were:

Transplanting and weeding: Posters 1 and 2 (see Fig. I (a) and (b)).[1]
Peripheral irrigation channel.
Maintenance of main channel: Posters 3 (see Fig. I (c)) and 4.
Maintenance of subsidiary channels: Posters 5 and 6 (see Fig. I (d) and (e)).
Application of manure and fertilizers: Poster 7.
Levelling: Posters 8 (see Fig. I (f)) and 9.
Manure: Posters 10 and 11.
Sowing: Posters 12 (see Fig. I (g)) and 13.

Technique employed

It had been decided to show the thirteen posters in the ten villages where a literacy centre had been opened. The posters were displayed, one after the other, for approximately two minutes or longer if the peasants continued to comment on them. The audience consisted of peasants of both sexes who might or might not be taking the course. They were asked: 'Tell us what you can see there'. Often 'viewers' limited themselves to repeating what the first of them had said, in which case the gambit was: 'Right—there is that; now, what else can you see?' When no unprompted reply was forthcoming, the instructor questioned individuals, avoiding the more advanced 'pupils' in the first instance to avoid repetitive answers. The semi-literates and schoolchildren were asked tactfully only to join in last.

When the last placard had been displayed, the set was shown again, item by item, and the viewers were asked to indicate which they 'liked because they were pretty'.

Display order of placards

In order to avoid the 'learning' effect which is bound to become apparent as the last items come up, the display order was changed for each centre and a draw was held for each village.

Record of replies

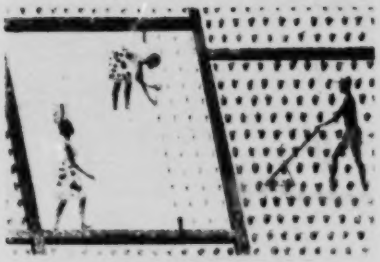
As the placards were shown, two assistants noted all audience remarks, plus such reactions as laughter, exclamations, applause, etc.

For each placard three points were distinguished corresponding to the three stages in the intellectualization of an image:

Enumeration stage. Viewers enumerate the objects which they 'see' in the picture (whether these are represented or not).
Description stage. They describe the situations they 'see' (whether these are actually represented or are imagined by them).
Interpretation stage. The viewers imagine the action which the image shown illustrates. They thus pass a judgement on what has happened before or what will occur following the scene represented.

For the placard to achieve its object, that of

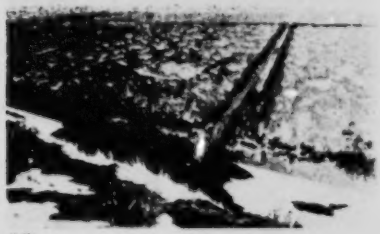
1. For the use of these two posters, see Document 28.



(a)

(b)

(c)



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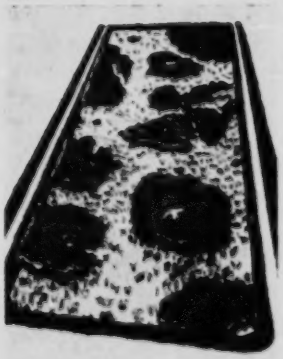


(g)

affording visual support for a didactic action, it must apparently epitomize—in a form immediately assimilable by peasants—a present or past action from which it is hoped to wean the viewers (problem placard), or an action for the future which is advocated by the teaching given (solution placard).

The replies collected during the showings were arranged according to the three stages defined above, and wholly correct replies were underlined: objects actually represented in the placard, situations accurately described, interpretations in accordance with the artist's intention. After each reply a figure was entered indicating the number of villages in which it was obtained.

CONCLUSIONS

Enumeration

For the thirteen posters in the ten villages, 274 answers were noted giving an average of two object designations per placard, of which only one is accurate. Of the 136 correct details identified, 40 relate to human beings and about 10 to cattle, leaving us with 76 correct answers regarding all the other items represented in the thirteen posters. As the peasants have very rarely seen graphic or film representations, there is no cause for surprise at the sparsity of the list of details that they are able to 'see'.

Analysis of the errors shows that in general the peasant apprehends the portrayals schematically. A rice field represented by the artist as an isosceles triangle, to show the perspective, is seen as 'a tight skirt', 'a glass', 'a milestone'. Rice grains sown in a seed-bed become stars in the sky; a peasant in shorts is a 'footballer'. A rice field with its rice shoots and weeds is a length of printed cloth, a 'flannel'. Large coloured splashes (mud, puddles, etc.) are likened to monsters, aeroplanes, cars, rickshaws, clouds.

The placards least comprehensible to the peasants are those full of detail: tufts of grass, seeds, puddles, rills; these unfailingly evoke ideas of sky, clouds and stars.

It can therefore be concluded that the posters should picture only a few things at a time and, if possible, without introducing background and foreground, or overlapping of figures or objects: the leg of the human figure should not hide part of the tool or part of the tussock of grass. The peasant must see the object represented in its entirety, preferably in a position frequently seen without trying for aesthetic results. It is better to show a man full face or in profile than three-quarter face or from an unusual angle. Each object must be seen separated from the others and must stand out clearly against a uniform, preferably white, background.

If attention must be directed to details, these must be few, isolated and sufficiently large in relation to the other masses to be understood, to hold the eyes of the viewer and to be recognized at a distance.

Moreover, each detail must be extremely accurate: the difference in colour of the two horns in the drawing of an ox was spotted and caused criticism and laughter among the peasants. Actions must be clear, true to life and, so to speak, kept to essentials. ('I don't see what she has in her hand', one spectator remarked.) Often peasants shown using a hoe were judged to be thrashing mango-trees, painting walls or spraying insecticides. Similarly, most viewers described a woman weeding by hand as planting flowers, cotton or saplings.

Description

There were 62 accurate descriptions of parts of the posters among the 145 recorded, or approximately 40 per cent. It is important to note that over 95 per cent of the descriptions given are of what a 'person'—man or woman—is doing, or ought to be doing. It seems essential, therefore, to include at least one human figure or animal in each placard. In the series of thirteen posters used in the test, only seven included human figures.

Experience has proved that the scenes represented should show figures whose actions cannot give rise to ambiguous interpretation. Middle shots should be used. Partly hidden figures or objects will not be identified at once because they do not enter into the visual or cultural range of

the peasants. Similarly, wide-angle shots with depth are not immediately grasped by participants in the courses. Thus, a figure shown at work in a corner of the rice fields seems more easily identified by peasants than one drawn foreshortened beside the seed-beds shown in their entirety. The drawing of the rice paddy (perhaps because of its uniform content) then becomes a rice field perspective and this symbolic level is no longer understood by the peasant (Posters 1, 2, 5, 6, 7, 8, 9, 12 and 13). Pictures of rice land as such are mistaken for the sky, lengths of cloth, swamps, the sea, etc.

As regards clothing, there is no doubt that the simple—even stylized—coloured garments of the Befandriana posters were more appreciated than the drab garments in the poster series used in the experiment: the peasants hesitated over the sex of the figures, and took the garments shown for sportswear or European dress.

Interpretation

Except in the case of the Befandriana placards which were immediately recognized as the representation of two modes of culture—modern and traditional—and Poster 7, which was also understood, no poster was perceived to represent a situation which obliged the spectator to pronounce a right or wrong judgement.

SUGGESTIONS

The team in charge of testing the thirteen posters suggests that:

Only Poster 7 should be retained (fertilizers and manure).

At least one figure or an ox should be shown on each poster.

Only middle-shot representations should be used, in which details can be seen at five metres in relatively poor light.

The poster format should not be less than 50 by 80 centimetres (it can be reproduced in two parts on the Heidelberg Kora machine ordered for the project).

The 'style' of the Befandriana posters should definitely be adopted for all posters to be produced.

Figures and projects should not overlap, but should stand quite clear of each other, preferably against a white background so that they can be distinguished at a distance.

Colours should be those of the country, slightly brightened, since allowance must be made for the fact that the placards will be viewed at night with insufficient lighting.

The subject to be illustrated (the peripheral channel, for example, which is practically invisible on Poster 2 of which it was the theme) should be sufficiently an 'eye-catcher' from the point of view of mass drawing and colour, to be identified at the outset.

The placard should not be treated as an illustration of a lesson or as a puzzle, but as a visual aid reinforcing an oral explanation—placard and discussion should each support the other (feedback).

In future, placards should be designed jointly by the draughtsman and the course-compiler throughout the drafting stages so as to establish a text dialectic, which alone (with the image clarifying the thought and suggesting the idea) can lead the peasant to hypothetico-deductive thinking.

Document 25

The perception of images (Zambia)
Picture-style preference [1]

This test was conducted on a simple of sixty-three people, forty-eight women and fifteen men, from Northern, Eastern, Southern and Western Provinces in Zambia. Ages varied from 15 to 70 years. In all, 403 tests were carried through on the sample. Of the sixty-three subjects, forty-six were pure illiterates, seventeen had a few years in school, nineteen had stayed in a bigger town for a year or more.

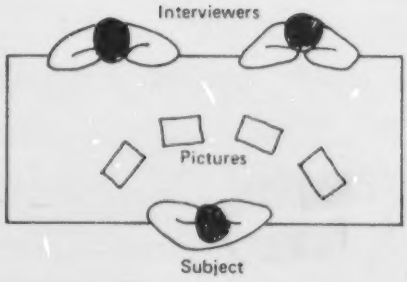
The test was prepared and conducted in the following way. Assuming that the relevance of objects and pictures to daily life and environment is decisive for proper recognition, we photographed at random these motifs:

1. A house with a woman sitting outside.
2. A kettle on a fireplace.
3. A cooking pot on a charcoal burner.
4. A walking lion.
5. A man drinking beer.
6. A woman sitting cooking *nshima*.
7. A woman walking with a bucket on her head.

All these motifs are familiar to most Zambians in any part of the country. The photographs were enlarged to a size about 10 by 16 inches, and 'copies' in the same size were produced in these styles: a simple line drawing; a silhouette; a 'block-out' of the subject, i.e. with background from photograph eliminated; and finally the photograph itself (see opposite).

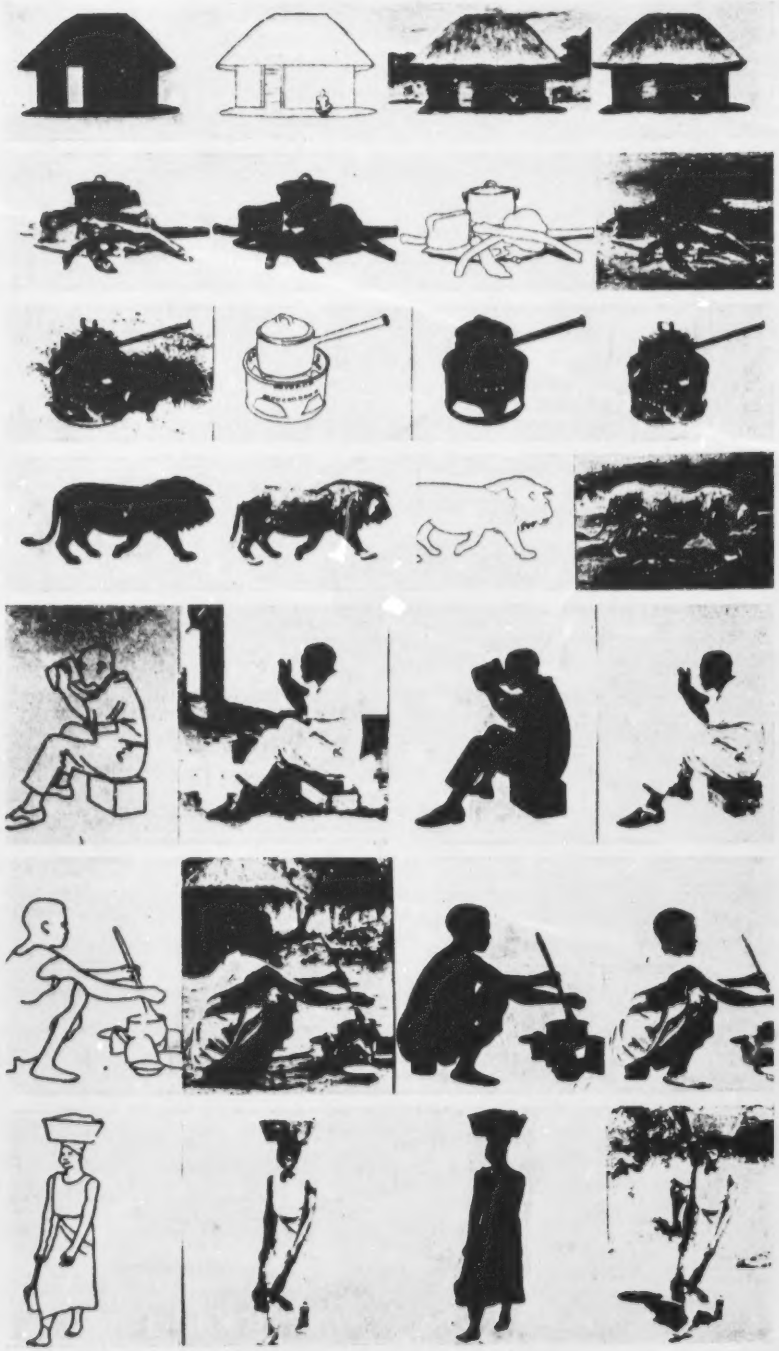
These pictures were presented to the subjects in series of four, held in a half circle to ensure equal distance to the eyes (see diagram).

Great care was taken that the order of the pictures from left to right was altered at random for each series of four.



Exposed to the series of pictures, the subject was told the following: these four pictures show you the same thing, tell you the same story. Can you tell us what you see? When identification of the content was satisfactory, the subject was asked: will you point out for us in which picture you saw this first? During the interview the eye and head movements of the subjects were followed closely. With few exceptions, they indicated the same picture as that which was finally pointed out by the subject. In the few cases of difference, the picture finally pointed out was ticked off in the form. The results of the test are seen in the table on page 120, the figures giving the number of 'point-outs' for each of the four styles, and each of the seven picture contents.

1. This article, published in *OVAC Bulletin*, No. 22, October 1970, is by the Director, The Public Relations Unit, National Food and Nutrition Commission, P.O. Box 2669, Lusaka (Zambia). It is extracted from a larger study entitled *Communication with Illiterates*. Inquiries as to the availability of copies of this study should be made to Mr Fuglesang at the above address.



Results of picture-style preference test

Picture motif	Line drawing	Silhouette	Block-out	Photograph
1. House with woman	3	6	30	21
2. Kettle on fireplace	2	6	23	16
3. Cooking pot on charcoal burner	2	5	39	15
4. Walking lion	1	3	37	15
5. Man drinking beer	0	7	30	20
6. Woman sitting cooking *nshima*	4	3	35	19
7. Woman with bucket on head	3	0	36	22
	15	30	230	128

Of the sixty-three people tested, only two failed to give satisfactory identification of the picture content. One of them said that the storage house in photo-series 6 was an elephant.

I have often met the assertion that illiterates do not understand pictures. The implication is that they have not learnt to interpret them. I feel that the implication rather is that they have in any case been exposed to pictures whose content is not familiar to them or whose style and reproduction are such that identification is made difficult. The results of this study indicate that illiterates can identify and understand pictures with ease if certain considerations are taken into account when pictures are produced.

The table shows clearly the relatively low value (15) of pictures made in simple line drawings. As used in this test, they do not feed enough details to the observer which are of importance for identification. Considering that most printed teaching material and visual aids produced for use in developing countries are probably made in line-drawing style, one feels somewhat hesitant about their suitability. On this background further and more thorough research seems to be of importance.

The silhouette seems to provide a relatively stronger impact (30). Probably not because it supplies more detail but because it stands, by virtue of strong contrast, visually so to speak in relief.

The 'block-out' photograph comes out with quite a significant figure: 230. It provides contrast to some extent. The background with its disturbing details is eliminated, but details of the objects themselves are there and make identification and understanding easier.

The photograph also comes out with some significance (128). It will be seen that some of these photographs have, accidentally, a comparatively neutral background. My hypothesis is that more disturbing details in the backgrounds would have made identification more difficult, and thereby lowered the figure.

Photographers tend to think in the square frame. From the point of view of communication, many printed teaching aids produced for developing countries would have gained considerably by blocking out of backgrounds and details irrelevant to message and objective.

The teaching aids produced for the National Food and Nutrition Commission have been based entirely on this ' block-out principle'.

When this test is performed it gives the observer a vivid impression of how the process of selection is controlling sensory activity. At first the eyes of the test subject are scanning the series from left to right, or vice versa. Then the scanning becomes more and more 'narrow' until the eyes finally 'settle' for a certain picture.

It should be mentioned that sometimes when the subject's identification of a picture is slow and difficult to bring about, even the slightest allusion to one of the relevant details in the picture is enough to reveal the whole picture for the subject. For example, the picture of a woman cooking *nshima*. Given the clue—can you see a wooden spoon?—the subject immediately sees and under-

stands the whole story in the picture. Teaching aids do not speak for themselves. They must be explained! Details are decisive for the subject's interpretation of the picture. 'A woman cooking food' was generally considered sufficient for tick off as identified. Quite a few female subjects said however, 'A woman cooking *nshima*'. When asked: 'Why do you think it is *nshima*?', answers were either: 'She is using a big *nshima* pot' or 'She is strewing mealie meal in the pot with her hand'. The model was in fact doing just this. Chances for making fatal mistakes are great when photographs are staged.

Document 26

Functional Literacy Pilot Project (Mali)
Sowing cotton in drills

HOW TO TRACE THE FIRST ROW

Stick a clearly visible pole (aiming mark) in one corner of the field.
Why? It will give the direction of the first row.

Go to the corner at the other end of the field.
Run a cord from this corner to the guide-pole.
Tighten the cord.
Why? So as to get a straight row.

With a marker, trace the first row, quite straight, along the cord.
Why? This is the row by which the drill will be guided, and, thus, all the other rows.

HOW TO TRACE THE FOLLOWING ROWS WITH THE DRILL

Place the first tooth of the cultivator in the first hand-traced trench at one end of the field.
Why? The tooth will keep moving along the row.

Drag the cultivator backwards by a series of small jerks to the other end of the field.
Check carefully that all rows are marked.
Check carefully that the tooth of the cultivator has remained in the row.
Turn about and place the first tooth of the cultivator in the last row traced. Repeat until the operation has been carried out over the whole field.
Why? The straight rows make sowing and the work of cultivation easier.

HOW TO PREPARE SEED-BEDS AND SOWING

Using a 30-cm (1½ handspans) measuring-stick, dibble the seed-holes along the length of the rows marked out.
Move along the line marked out with the seed-filled calabash on the left arm.
Take a handful of seed in the right hand.
Drop four seeds in the hole.
Cover by pushing soil into the hole with the foot.
Ram the soil down with the heel.
Why? To ensure that the seed is in close contact with the soil.

Proceed in the same way for all the other seed-holes.

Document 27
Functional Literacy Project (Algeria)
Pruning fruit-trees (first session)

NEED FOR AND IMPORTANCE OF PRUNING; DIFFERENT KINDS OF PRUNING

Object

To explain the need for pruning and its importance for the growth and yield of certain fruit-bearing species, particularly vines, citrus fruits and olive-trees.

A further point to be brought out is the balance necessary between the aerial and the root systems and between the vigour and the productivity of the plant.

Method

The instructor briefly recapitulates the two previous agricultural technical sequences: plants need nourishment and protection against disease and pests. But it must not be forgotten that plants also need other forms of care, among which pruning is of the first importance for certain species of trees. After this brief introduction, the instructor explains the subject of the session.

Duration. Forty minutes.

Material. Three mounted placards.

Introduction

We have already seen in preceding sessions that the plant is a living organism:

1. It must be nourished, in the same way as men and animals, in order to live and produce.
2. Like them, it has to stand up to its enemies—diseases and insects that may attack and destroy it.
3. For men and animals, food and resistance to disease are not sufficient to maintain good health: they protect themselves from cold in winter and extreme heat in summer; they rest when they are tired.

   Men arrange their work to fit the limits of their strength and their potentialities (example: it is better to make two journeys in transporting a heavy load).

Show that this keeps them in good health and helps towards a balanced way of living.

Similarly, the plant requires more than the necessary nutriment and protective measures to keep it alive and provide good yields, e.g. tilling, weeding, hoeing, protection against extreme cold and heat, etc. Thus, certain trees need pruning.

Ensure maximum audience participation. You have heard about pruning. Some of you know how to prune vines or other trees. Can you list the trees which need to be pruned?

The principal varieties which need pruning are vines, citrus, apple, pear, peach, cherry, plum, apricot, etc.

PURPOSE OF PRUNING

Why do vines and fruit-trees need pruning? Let the audience express opinions and try to get a discussion going.

Pruning consists in cutting off parts of the plant. Its object is to create the best conditions for the

plant's development and productivity and to keep it in health.

Easier working of the plantation

Pruning consists in giving the tree a specific form which enables the necessary operations to be carried out without too much difficulty: cultivation, picking, etc.

First example. If citrus-trees (orange, lemon, etc.) are left unpruned after planting, the branches of two rows will cross and touch the ground, making it difficult for tractors and even workers to pass, and hampering the work needed.

Second example. Sprays do not easily reach all the inner parts of the trees. Leaves and branches which are missed remain infested and spread the enemy to other parts of the tree.

To enable light and air to penetrate

Do you consider it is important to let air and light penetrate to the centre of the tree? If so, why?

1. Sunlight is very important for the formation of the leaves and fruit on the tree.
2. Air also should be able to circulate easily among branches and leaves.
3. If the tree is ill-lighted and badly ventilated it provides a favourable breeding-ground for insects and disease; the blossoms do not develop properly into fruit; and the fruit does not ripen normally.

Why does a tree, when offered poor light and air penetration, provide a favourable environment for the development of insects and disease organisms?

We know that insects and disease organisms develop rapidly in humid and equable conditions.

If the tree is not pruned, the penetration of sunlight and air is poor. Heat and humidity are retained and the result is a favourable environment for the development of the tree's enemies.

Regularization of yield

Does pruning affect the quality and quantity of the yield?

Pruning enables the quantity and the quality of the yield to be regulated. It has a direct effect on the number and size of fruit:

Quantity. A man, as we know, who can carry only 30 kg has to split a load of 60 kg and make two journeys with it. The plant has an optimal bearing capacity, dependent on a number of factors: age, growth, nutrition, irrigation, climate, general state of the tree, etc. Pruning is an operation that enables the quantity of the yield to be regulated in terms of these factors.

Quality. The quality of fruit is also affected by pruning. For example, a 15-year-old apple-tree can produce 300 apples of normal size (6-cm diameter, or over). This size is considerably reduced if the tree produces 600 apples. The quality of the yield becomes poor.

What happens if vines are not pruned? (Try to listen first of all to the replies of a number of the participants.)

Among the species which need pruning, the vine takes first place. Pruning is a vital operation in vine-growing. An unpruned vine makes excessive growth, and the vine shoots become very long. The vine makes a lot of wood but the grapes remain small; ripening is irregular and production very variable.

Document 28

Functional Literacy Project (Madagascar)
Befandriana Operation
Weeding and hoeing rice

OBJECT

Remove the weeds.
Secure vigorous plants.
Increase yield.

MEANS

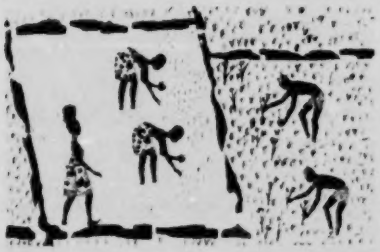
Problem-posters.
Discussion meeting.
Two *kapaoka* of rice (paddy and white rice with weed seeds).
A rotary hoe.

TEACHING GUIDANCE

A few days before the session, locate the rice fields planted randomly and those planted in rows, and find out the dates of planting out.

TECHNICAL GUIDANCE

Two weedings are indispensable.
Three are preferable.
Keep to the weeding time-intervals.



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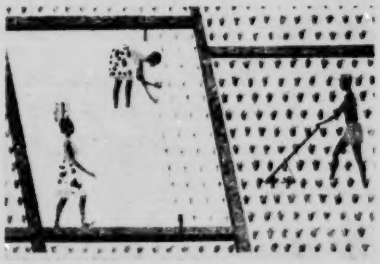


(b)

FIRST STAGE: DISCOVERY AND COMPREHENSION OF THE PROBLEM (USING POSTER A)

Instructor	*Peasant*
What are the two peasant women doing in the rice paddy?	They are planting out rice seedlings.
How are they planting out?	Randomly.
What are the two men doing in the paddy?	They are weeding.

Tip out the contents of the kapaoka *of paddy and the* kapaoka *of husked rice.*

This paddy and this rice are from the rice field weeded by the two peasants. What do you see in the paddy and the rice?
Where do they come from?

There are black seeds.
From the *tsikalabanga* (a kind of darnel) growing in the rice paddies.

Do you like the taste of these seeds?
Which do you prefer, rice with or without *tsikolabanga*?
You have just told me that you do not like the taste of these seeds, yet they are present in the rice you harvest.

Certainly not, they taste very unpleasant.

Rice without *tsikalabanga.*

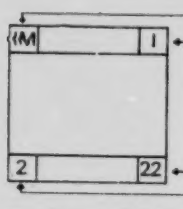
SECOND STAGE: EXPLANATION OF THE PROBLEM (USING POSTER B)

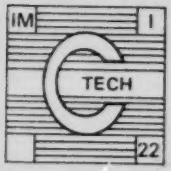
Instructor	*Peasant*
What is the peasant woman doing?	She is planting out the seedlings.
How is she planting out?	In rows.
What is she doing to make sure that the rows are straight?	She uses a cord.
After how many days do the weeds appear in the rice paddy?	About fifteen to twenty days after transplanting.
Why mustn't the weeds be allowed to grow in the rice paddy?	Because they produce seeds which we do not like.
Why, in your opinion, do the weeds hinder the growth of the rice seedlings?	They choke the plants and take part of the nutriment in the soil away from them.
If we let the weeds take nutriment away from the seedlings, will the yield be good?	No, the harvest will not be good.
What must be done to ensure a good harvest?	Weeding.
You have just told me that in order to obtain a good crop and thoroughly clean rice, the rice paddy must be weeded.	
You see the two peasants weedings their rice paddy (poster A). Is their work easy and efficient?	No. Their work is laborious and they crush rice seedlings.
What is the peasant doing (Poster B)? *(Show the rotary hoe.)*	He is pushing an implement before him.
This is the implement the peasant is pushing. Who knows what it is called?	A Japanese hoe; a rotary hoe.
Which of you has attended a demonstration arranged by the head of the sub-sector?	[Various replies.]
During the demonstration, which of you used the rotary hoe?	[Various replies.]

Instructor	*Peasant*
Did hoeing with the rotary hoe seem to you to be easier than weeding by hand?	It is easier than weeding by hand.
Is it quicker as well?	It is quicker.
In order to be able to use the rotary hoe, how must the planting out be done if plants are not to be uprooted?	Planting out must be done in rows to avoid uprooting of plants.
Rotary hoeing is therefore easier and quicker than weeding by hand.	
Who knows how many weedings are required to obtain a good harvest?	[Various replies.]
How many days after the first weeding should the second be done?	Fifteen to twenty days after the first weeding.
For a good crop the paddies should be weeded at least twice and if possible three times, fifteen to twenty days after transplanting, fifteen to twenty days after the first weeding.	
THIRD STAGE: ADOPTION OF A SOLUTION	
Some of you practise weeding. Have you noticed that your rice is cleaner and the yield is greater since you have done this?	[Various replies.]
Who will continue hoeing their paddies?	[Various replies.]
Who will adopt this new cultivation method?	[Various replies.]
FOURTH STAGE: APPLICATION	
In the course of the visits to peasants, find out which of them practise planting out either randomly or in rows, and when.	
Mr X, can we come and help you weed your paddy tomorrow or the day after? (*Choose a randomly replanted paddy.*)	
Mr Y, can we come and help you weed your paddy on ... ? (*Choose a paddy planted in rows.*)	
Inform the head of the sub-sector so that he may provide a rotary hoe where appropriate.	

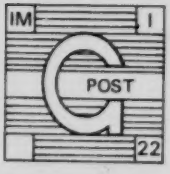
Document 29

Functional Literacy Project, Eşfahān (Iran)
Sequence 2 (extract from a functional literacy course)

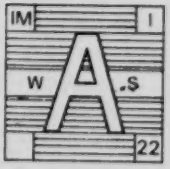




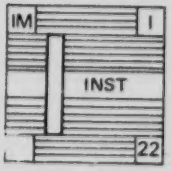
Content *(contenu)*	TECH	Technical	*(Technique)*
	DRAW	Drawing	*(Dessin)*
	SCIE	Science	*(Science)*
	SOCI	Social	*(Sciences sociales)*
	CALC	Calculations	*(Calcul)*
	LANG	Language	*(Langue)*



Group *(groupe)*	PAGE	Page	*(Page)*
	POST	Poster	*(Affiche)*



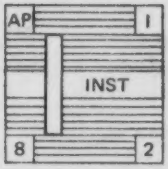
Adult *(adulte)*	W S	Work Sheet	*(Feuille de travail)*
	H S	Handout Sheet	*(Feuille distribuée)*



Instructor *(instructeur)*

Designation of material.

G
POST
7



INSTRUCTORS' NOTES

Technical session

The object of this sequence is to give the farmers a more rational understanding of the causes of smut (a corn disease), a more precise technique in detecting the first signs of the disease and mastery in adopting appropriate remedies for arresting the development of the infection.

No doubt, the group of farmers with which you are dealing already has a thorough experience of this disease.

On the first day, therefore, ask them to tell you what they know about smut, how this disease has affected their crops, how much less the crop has been compared to a good year, what they have achieved in fighting it, etc.

Then use their own experience as a basis for group discussion of the problem. Organize the group according to the instructions received during the training course and remember to allow them to speak, acting yourself only as moderator.

Afterwards, summarize the main points which have arisen from the discussion and in addition provide the group with some information about action taken in other countries by farmers experiencing the same problem.

Then explain to them that you would like, during the following days, to introduce some new useful elements of knowledge which can help them to gain better control over the disease.

Finally, establish with them a plan of work to be developed by themselves, out of the classrooms, by gathering some data concerning the problem under consideration which will permit a better implementation of the sequence target.

Follow the above steps and develop them, with particular attention to the fact that this second sequence should mark the beginning of an approach designed to create a new attitude of mind and to develop skills and procedures which can accelerate the solution of the problem.

Language and mathematical progressions

As regards language and mathematical progressions, reread the notes given to you during the training course.

Scientific concepts

In order to awaken the interest of the adults, scientific concepts must be discovered by them instead of being taught in a conventional way.

For this reason you must always base your scientific teaching on practice and experimentation.

As regards the scientific topic under consideration, the elements examined are integral parts of the environment in which the adult lives.

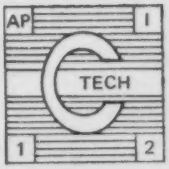
Then allow the students to learn about the topics by direct observation.

Socio-economic aspects

This session should be so organized that the full participation of the group is achieved.

Open the discussion by showing them, as an initial document, a comparative table of the cost of production of different crops in Iran and in the rest of the world.

Then allow the members of the group to contribute actively to the discussion by (a) relating their direct experiences in harvesting, storing and marketing wheat; (b) answering your questions concerning comparative analysis of the production costs of the main local crops.



HOW SMUT IS SPREAD

How the disease appears

Smut is a disease of wheat. In order to eradicate this disease, we should know how it appears. Some farmers who do not know the main reason for its appearance, think that cold or bad climate causes the outbreak of this disease. If we crush a grain of diseased wheat, we will see that there is a black powder in it. This black powder will cause disease in subsequent years. If we look at the black powder under a microscope (an instrument which magnifies), we will see hundreds of small fungi. If we sow these spores along with the grains, each spore will sprout and grow. After a few days these sprouts will take nourishment from the food that the grain absorbs for itself. As a result, the wheat plant becomes weak and thin. But as long as there are no ears on the plants, we are not able to see the spores. When the ears appear on the plants, we can see them inside the grains of wheat instead of white starchy matter.

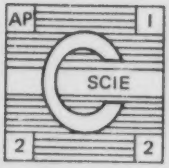
The break-out of disease

There are a lot of spores inside a diseased grain of wheat. When we thresh the wheat, millions of spores will come out from the wheat. Some of the spores hide on the seeds and if we sow this without disinfecting it, the spores will grow. If we disinfect the seed before sowing, we will have a good yield.

Where is the wheat infected by spores?

As described above, the point at which the wheat is infected with spores is at the threshing stage, when the diseased wheat seeds break and the spores come out and infect other grains. Another place where the disease is transferred is in the gunny-bag. If we carry the sick seed with a gunny-bag, a lot of spores will remain in it and will infect the grains that will be carried later.

If we shed diseased seeds of wheat in a place and later use this place for healthy seed, this will also be infected. Sometimes, the wind transfers the spores to the field and causes infection of the crop.



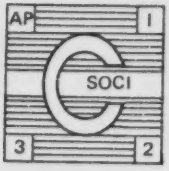
FUNGUS AND MUSHROOMS

As we all know, there are a lot of different plants growing on the earth: big trees, bushes, herbs, mushrooms, etc.

As we have dealt with a fungus disease on wheat let us see what fungus is. It is a kind of mushroom.

Mushrooms are plants which can live and develop—usually in moist conditions—without becoming green. Usually plants need to be green in order to use nourishment and grow.

Common to all mushrooms is the fact that they use substances prepared by other plants or animals for their own development. Mould is also a kind of mushroom. There are many other diseases caused by fungi. One of these fungi diseases is smut. As with all other mushrooms, the fungus smut takes its nourishment from that which is already prepared by the host plant. This means that it takes the substance which should have become wheat flour.

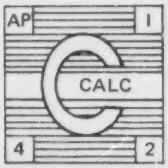


IMPORTANCE OF WHEAT

Wheat is one of the most important crops in the world. It is grown in most countries and it is the main ingredient in bread almost everywhere. Also in Iran it is the main winter crop.

The price of wheat is not very high but it does not vary as much as that of many other crops. If we control the most important diseases and vermin which attack wheat, it is then a good crop that can give quite a good yield while using only a moderate amount of water. Thus wheat is grown not only where irrigation is possible, but also as a dry farming crop in parts of the country where there is no possibility of irrigating.

The production costs for wheat are low compared with most other crops and it can also be grown at a time of year when not many other crops are possible. Wheat is and will remain one of the world's most important crops. To control smut is a safe, easy and cheap way to get a better yield from this important crop.



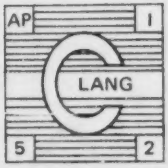
MATHEMATICAL CONCEPT

Comparative yield per djerib and loss

Example:
Healthy yield: 500 kg.
Infected yield: 200 kg.
Loss: 300 kg.

BASIC MECHANICAL OPERATIONS

Subtraction (500 kg minus 200 kg = 300 kg) and its implementation by additional exercises.



Smut is a *disease*.
Smut is a *disease* of wheat.
New word: disease.

Smut is a kind of *mushroom*.
Smut is a *mushroom* of wheat.
New word: mushroom.

Smut is a fungus disease.
New word: fungus.

Smut is a disease.
Smut is a disease of wheat.
Smut is a fungus disease.

Document 30
Functional Literacy Experiment, Mornag (Tunisia)
Technico-scientific training

PROBLEM

Hoeing as a contributory factor in water conservation.

AIMS

Technico-scientific explanation of the operation: to loosen the surface soil; to destroy weeds and aerate the soil; to conserve water.
Socio-economic aspects: to keep the vineyard in good heart and increase yield.

MEANS

Teaching aids: Poster 3.
Material: clod of dry earth; plate; water.

TECHNICAL REMARKS

Keep as closely as possible to the agricultural calendar; this session may, nevertheless, be given outside a period of tillage operations.
The essential aim of this session is to lead co-operative trainees to understand the 'why' of the phenomena which contribute to water conservation.
Stress more than ever the socio-economic aspects of the operation.

PEDAGOGIC ADVICE (FOR THE GROUP LEADER)

Do not forget that you are a 'pre-co-operator' on the same footing as the rest; you must contrive to preserve the spirit of comradeship which alone permits of the fullest active participation by all.
Remember that the following questions are posed as much by you as by the listeners.
This session lasts approximately one hour.

PROCEDURE

Appreciation of the problem

What we are going to talk about today is water.

The conservation of water, of which supplies are limited in our region, demands that we adopt a policy of water economy and appropriate technical measures.

What specific techniques are used by us to ensure maximum water conservation for plants? *Open discussion: hoeing, reafforestation, banking.*

With spring nearly over and the hot weather beginning, it is time to embark upon the important operation of hoeing, particularly in the vineyards.

Technico-scientific explanation of the operation

We know that in winter the purpose of trenching round the vines is to collect more water for their use.

In early spring, earthing up is carried out in order to cover and protect the vine stocks—which assists water conservation.

Now that the hot weather is here the water evaporates more quickly.

Let us see first of all how evaporation takes place. *Capiliarity experiment with a clod of earth or a lump of sugar.*

What do you see? *That the water rises to the surface through tiny channels.*

These are the capillary channels.

Water rises through the capillary channels and evaporates.

What should be done to stop this evaporation? *Unprompted replies.*

The hoeing breaks the capillary channels.

What does the breaking of the channels also encourage? *Unprompted replies.*

It encourages the development of microbial life.

What is a microbe? *Unprompted replies.*

A microbe is an organism which is so tiny that it cannot be seen with the naked eye.

Hoeing aerates the soil and thus enables the microbes to bring more nutritive elements to the vine.

Socio-economic aspects of the operation

In farming it is often said: 'A good hoeing is worth two waterings.'

What is your opinion of this statement? *Unprompted replies.*

There is no doubt, therefore, that hoeing is an essential operation if a greater yield is desired.

If the vine is treated, watered and fertilized, is this sufficient without hoeing? *Unprompted replies.*

The conclusion is that thorough hoeing puts the finishing touch to the previous operations and that the results of these operations are less than expected if tillage has not been carried out.

Conclusion

Hoeing is essential to the life of the vine.

It aids water and soil conservation.

It ensures good yields, a source of profit for the future co-operative members.

Document 31

Gezira Development Project (Sudan)
I. Wheat watering and diseases

Tenant practices	Reasons for such practices	Proper methods advocated	Reasons given
WATERING OF WHEAT			
Our studies have revealed that most of the tenants do not follow the proper watering intervals.	Most of the tenants lack the correct information about the proper watering intervals.	The watering interval should range between twelve and fourteen days.	While increasing the watering interval causes weakness of the plants, decreasing those intervals delays the harvest.
Most of the tenants know the proper amount of water needed for the crop during the flowering stage.	Although they know the proper amount of water needed during the flowering stage they do not know the reasons.	Reasons should be given.	More than at any other stage, wheat needs much water during the flowering stage to help the plants in seed formation.
Most of the tenants give a lot of water to wheat during the ripening stage.	Lack of correct information about the proper amount of water needed during this stage.	Giving wheat a small amount of water during the ripening stage. The amount should be less than any amount given during other stages.	During the ripening stage, the heads and the seeds begin to dry and increasing the amount of water delays their ripening and consequently their harvesting.
Many tenants water their hawashas heavily. Consequently, the wheat plants are flattened to the ground when the wind blows. This results in seed failure and makes mechanical harvesting difficult.	They think that a lot of water is always useful to the crop.	Light watering of wheat during the last stages.	Light watering of wheat during the last stages helps its growth without exposing it to flattening when the wind blows. In addition, it makes mechanical harvesting easier and preserves the seeds from being lost in the ground.

Most of the tenants know that, during the months following the ripening stage, wheat is attacked by aphids ('assala'). However, they do not recognize the signs of aphids and they lack the right attitude to informing the responsible authorities.	Lack of knowledge about the signs of aphids and a casual attitude to informing the responsible authorities.	Explain to the tenants the signs of aphids. The aphid is a tiny insect which lives as a parasite on wheat plants and absorbs the leaf juice, causing weak growth and twisted leaves. In severe cases, it kills the plant. This insect secretes a honey-like substance on leaves on which rot viruses grow. These viruses make leaves black in colour. When these symptoms are detected, tenants should immediately inform the agricultural extension worker or entomologist section staff to help cope with the problem.	Tenant's knowledge of the signs of aphids enables him to detect the disease provoked by aphids as soon as it appears. He should immediately inform the authorities concerned in order that the necessary measures may be taken for controlling the disease. As a result, the loss will be reduced to a minimum.

II. Watering cotton during the picking season

Tenant practices	Reasons for such practices	Proper methods advocated	Reasons given
WATERING PROGRAMME DURING THE PICKING SEASON			
Some of the tenants appreciate the necessity for regular watering during picking but others delay watering till they finish picking.	Negligence or lack of knowledge about the bad effects which delay in watering has on the newly developing bolls.	Do not delay watering till you finish picking the whole hawasha. Instead, begin watering it as soon as you start picking in the third gadwal. *Always keep two gadwals between picking and watering.*	Delaying the watering of your hawasha until you finish picking it causes thirst in the plants, resulting in damage to the newly developing bolls. In addition, the delay makes the second picking more difficult since the earth is still wet. Finally, it exposes cotton to dirt.
During picking, most of the tenants water their cotton irregularly, i.e. varying the number of days between each two waterings.	Lack of correct information about the watering intervals.	During picking, the watering intervals should range between twelve and fourteen days.	Increasing the duration of the watering intervals causes thirst in the plants which results in weakness and reduction in the number of bolls. Shortening of watering intervals, on the other hand, leads to more vegetative growth, more exposure to and damage by boll-worms, the non-opening of bolls, and the shedding of small bolls.

Many tenants leave less than two gadwals between watering and picking.	Lack of information about the right number of gadwals to be left between picking and watering.	Two gadwals should be always left between picking and watering.	Leaving two gadwals between picking and watering facilitates picking in the regular way. If only one gadwal is left, water may leak to the next unpicked gadwal. This impedes picking and exposes cotton to dirt.
AMOUNT OF WATER NEEDED DURING PICKING			
Most of the tenants water their hawashas heavily during picking.	They think that the more water they give, the better the crop will be.	During picking, only a limited amount of water is required, i.e. not exceeding two-thirds of the ridge, and no water should remain in the bottom of the ridge until the next day.	Light watering saves water for the other tenants. It also increases the number of bolls, lessens the damage from boll-worm, strengthens the plant and helps the opening of bolls. On the other hand, heavy watering increases vegetative growth, leads to heavy attacks of boll-worm, and interferes with the breathing of roots. All these factors result in yellow leaves, weakened plants, heavy shedding of small bolls and leaves, the non-opening of the newly developing bolls and finally delaying picking.

Document 32
Functional Literacy Project (Guinea)

PROBLEM

Ignorance of the use of fire-extinguishers.

AIM

To make the worker realize the value of extinguishers and show him how to use them effectively.

TEACHING MEDIA

Poster 1 showing a house on fire, an extinguisher attached near by, people putting out the fire with water and branches.
Meeting; discussion.

REMARKS

This card is intended to serve as a guide to the instructor in his daily task, but in no way seeks to restrict him to a rigid procedure. During the lesson the instructor is free to make any further comments that will contribute to the interest of the discussion meeting.

Procedure of the discussion meeting

FIRST PHASE: DISCOVERY AND APPRECIATION OF THE PROBLEM

[The instructor displays the poster.]	
What does this poster show?	A house on fire.
What are the people doing?	They are putting out the fire with branches and water.
Do appliances exist to extinguish fires?	[Various replies.]
What do you do to spray the gas?	[Various replies. One should press hard on the trigger and aim at the base of the flame.]

Scientific aspect

What is the name of the gas with which the extinguisher is filled?	Carbon dioxide.
What is the name of the gas with which oxy-acetylene welding cylinders are filled?	Oxygen.
What is the difference between these two gases?	Carbon dioxide extinguishes fire. Oxygen feeds it.

Economic aspect

What effect would a fire at the NSAP factory have on national economic development?

[Various replies; discussion. Loss: damage to expensive machinery. Government obliged to agree to further disbursements to set the firm up again.]

But where would the State obtain the funds to rebuild the factory?

From the whole population, by new levies and increased taxes.

What does this picture represent? [The instructor points to the extinguisher.]

A fire-extinguisher.

Why aren't the people using it?

Because they don't know how to use it.

What advantage is there in using it?

It puts the fire out more quickly.

Yes, with the extinguisher the spread of the fire is checked more rapidly.

SECOND PHASE: EXPLANATION OF THE PROBLEM

Technical aspect

Now let us see how to use the extinguisher in case of fire.

In what position should the extinguisher be held?

[Various replies. It should always be held in the normal position, i.e. with the cap uppermost.]

Why?

[Various replies.]

Because if the extinguisher is held upside down the gas cannot be sprayed.

Social aspect

What would be the consequences of the fire for the worker himself?

Injury, unemployment and their repercussions on family life.

Solutions proposed by the group

To avoid all these risks, let us learn how to work fire-extinguishers and use them in case of fire.

Document 33
Functional Literacy Project (Guinea)
Teaching instructions for reading lessons

STEPS IN A 'LESSON'

First step: introduction to the new element, e.g. the letter 'M'

1. Start with a short seminal sentence conveying matters with a bearing on the group's vocational or socio-economic training.

This sentence is written under the poster.

The keyword containing the new element is shown in a 'box'; always select a keyword representing a concrete object which can be represented by a drawing.

Example: 'Be careful of the machines; Masiré has been injured':

I nakha yanfa | *masini* | *ma;*

Masiré bara a ma khö nö.

The instructor reads the sentence unhurriedly so that the listeners will grasp the meaning. He has them read the keyword.

2. Reading by the class, by analogy, the syllabic families of the word *masini*.

Write the syllabic families vertically:

ma	si	ni
ma	sa	na
mo	so	no
mu	su	nu
mö	sö	nö
mi	si	ni

Have the families read vertically and horizontally.

Have syllables read at random.

3. Isolate the new element. Make the class write it.

Second step: the 'word-hunt'

This operation consists in the construction (unprompted) of new words by combining two or more syllables from the syllabic families studied during the 'lesson'. The instructor does not intervene. He encourages the class to practise this exercise which is intended to facilitate attainment of reading proficiency. The words which have been formed are written on the blackboard. The class reads them, copies them and writes them from dictation.

Third step: deciphering a text

The third step consists in deciphering a text bearing on the training problems being studied and containing only those phonetic elements learned in the previous lessons.

The instructor takes no part. He lets the class decipher the text themselves. He encourages them and replies to any questions that he may be asked.

He then makes them read the text aloud.

Fourth step: mutual practice

The instructor hands out the individual reading-cards. He asks the class to read them.

The more advanced then 'hear' two or three of the others for about ten minutes, during which the class splits up into small groups.

This inter-student practice is to be encouraged with a view to its being done outside 'class'.

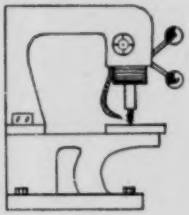
The 'student's' card can be set out on the following lines (see also Document 34):

(1)

(2)

I nakha yanfa masini ma
Masiré bara a ma khö nö

(3)



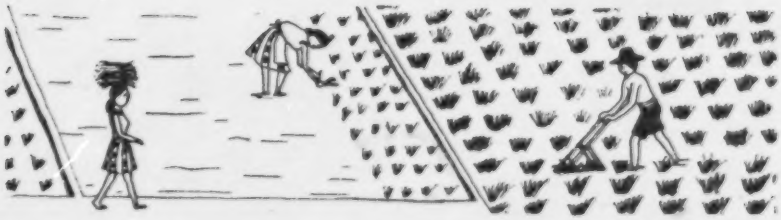
(4)

MASINI

ma	si	ni
ma	sa	na
mo	so	no
mu	su	nu
mö	sö	nö
mi	si	ni

1. Reproduction of the poster.
2. Concrete keyword.
3. Drawing representing this object.
4. Reading text. The texts in this final section should be of progressively increasing difficulty. In the initial lessons they can consist of a few words only, going on by stages to the sentence and then to texts of greater and greater length able to convey increasingly detailed instructional matter.

Document 34
Functional Literacy Project (Madagascar)
Befandriana Operation



vary voaava tena vokatra

(Thorough weeding of the rice *(vary)* pays handsomely)

vary
va ry
va
ve
vo
vi
vy
v

Mahaiza manetsa Ravaly

(Learn how to plant out, Mr Ravaly)

Ny ketsa ataovy tora-tady

(Plant out in rows)

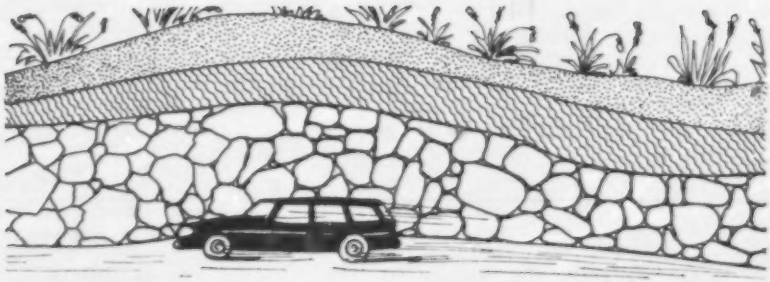
Mahavara miava vary

(Get the habit of weeding your rice)

Document 35

Functional Literacy Project (Ecuador)

Lección 7



La capa de tierra oscura es tierra orgánica

tierra orgánica

ga gue gui go gu

gua	güe	gui

ganado *ganado*
riego *riego*
largo *largo*
gusano *gusano*
agua *agua*
guano *guano*
guía *guía*
seguida *seguida*

Document 36
Functional Literacy Project (Ecuador)

Lección 8

El suelo necesita abono
La tierra orgánica tiene abono

necesita abono

ce ci

ba be bi bo bu

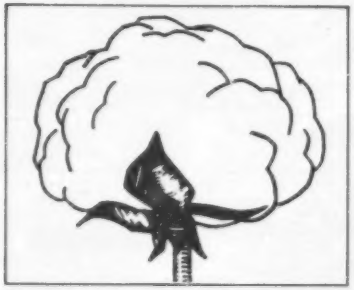
abono *abono*
abonado *abonado*
barato *barato*
basura *basura*
cerro *cerro*
cebada *cebada*
parcela *parcela*
árbol *árbol*

Document 37

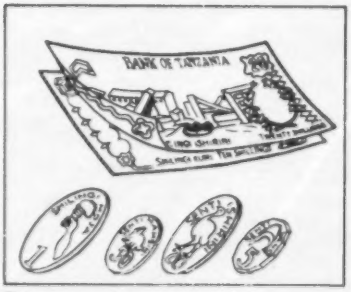
Functional Literacy Project (Tanzania)

Introduction to reading: how to grow cotton well

Somo la 1 (First lesson)



Pamba (Cotton)



Pesa (Money)

Pamba ni mali (Cotton is wealth)

Pamba huleta pesa (Cotton brings money)

Pamba	pesa	pesa	pamba

Andika (Write):

Pamba pamba pamba pamba pamba

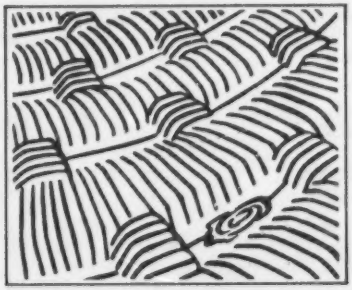
Pesa pesa pesa pesa pesa

Document 38

Functional Literacy Project (Tanzania)

Introduction to reading: how to grow cotton well

Somo la 2 (Second lesson)



Matuta (Ridge)

Matuta ya pamba (Ridges of cotton)

Pamba ni mali (Cotton is wealth)

Pamba huleta pesa (Cotton brings money)

matuta	pamba	pesa	ya

Andika:

Matuta matuta matuta matuta

Matuta ya pamba. Matuta ya pamba.

Document 39

Functional Literacy Project (Tanzania)
Introduction to reading: how to grow cotton well

Somo la 3 (Third lesson)

Parua shamba ('Scraping' = cleaning = weeding the field)

Matuta ya hatua 1 (The ridge of the first step, or long ridge)

Matuta ya hatua 2 (The ridge of the second step, or cross ridge)

parua	hatua	matuta	hatua

Andika:

Parua parua | Hatua hatua

Hatua 1. Matuta ya hatua 1.

Hatua 2. Matuta ya hatua 2.

Document 40

Functional Literacy Project (Tanzania)
Introduction to reading: how to grow cotton well

Somo la 4 (Fourth lesson)

Pamba ni mali (Cotton is wealth)

Pamba huleta pesa (Cotton brings money)

Parua shamba (Clean the field)

Matuta ya hatua 1 (The long ridges)

Matuta ya hatua 2 (The cross ridges)

hatua step	pamba cotton	parua clean	pesa money	matuta scrape
pesa	parua	matuta	huleta brings	pamba
matuta	hatua	pamba	parua	pesa
shamba field		huleta		mali wealth

pamba pa mba	pesa pe sa	matuta ma tu ta

parua pa ru a	hatua ha tu a

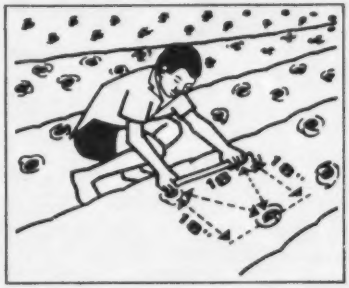
a	ha	ma	mba	pa	sa	ta	ya
pe	ni	ru	tu	ta	mba	sa	a
pa	ma	ha	ru	tu	ta	pe	ni

Document 41

Functional Literacy Project (Tanzania)
Introduction to reading: how to grow cotton well

Somo la 9 (Ninth lesson)

Matuta ya hatua 1
(Ridges of the first step or long ridges)



Matuta ya hatua 2
(Ridges of the second step or cross ridges)

Safu 1 (Row 1)

Safu 2 (Row 2)

Panda mbegu 4, 5 au 6 katika shimo
(Plant seeds 4, 5 or 6 in (each) hole)

Panda katika safu
(Plant in rows)

Matuta ya hatua 1, safu 1 tu
((In) ridges (long), row 1 only)

Matuta ya hatua 2, safu 2 tu
(Cross ridges, (in each) row 2 only)

Panda inchi 15 kati ya shimo na shimo
(Plant (with) 15 inches between each hole and the other (hole))

katika matuta ya hatua 1
(in ridges of the first step (long ridges))

Panda inchi 18 kati ya shimo na shimo
(Plant (with) 18 inches between hole and hole (between each hole))

katika matuta ya hatua 2
(in the ridges of the second step (cross ridges))

Panda safu 1 kwa inchi 15 kati ya shimo na shimo
(Plant in the first row with 15 inches between hole and hole (between each hole))

Panda safu 2 kwa inchi 18 kati ya shimo na shimo
(Plant the second row (cross ridges) with 15 inches between hole and hole (between each hole))

mbegu	safu	shimo	inchi	katika
seeds	row	hole(s)	inches	in (between)

inchi mbegu katika shimo safu

mbegu	safu	shimo	katika	inchi
mbe gu	sa fu	shi mo	ka ti ka	i nchi

mbe shi mo i shi mo i mbe

Andika:

Inchi inchi inchi inchi

Shimo shimo | Safu safu

Mbegu mbegu mbegu mbegu

Katika katika katika katika

Matuta ya hatua 1 (Ridges of step 1) (long ridges) Panda safu 1 kwa inchi 15 (Plant row 1 with 15 inches) kati ya shimo na shimo. (between hole and hole) (between each hole).

Matuta ya hatua 2 (Ridges of step 2) (cross ridges) Panda safu 2 kwa inchi 18 (Plant row 2 with 18 inches) kati ya shimo na shimo. (between hole and hole) (between each hole).

Document 42

Functional Literacy Project (Iran)
Integration of mathematics with a programme's technical content

Criteria to observe and tasks to carry out during the programme's development phase

The educator receiving the various parts of a sequence has to prepare an arithmetical teaching progression integrated with his programme's technical content as indicated in the table on page 154.

Model: General agriculture

Technical topics	*Identification of the mathematical concepts inherent in the technical content*	*Finding adults' related practical experience*	*Elicitation of rule or formula*	*Inventory of principal operations entailed in the mathematical concepts*	*Basic mechanical operations to be imparted during the first 11 weeks, listed in a didactic progression*
1. Allocation of land for various uses	Area	Adults' own problems with fields and land apportionment	Area = Length x Width	Numeration Linear measurement and its units Addition, multiplication Linear measurement Division, subtraction Time units Distance Speed Division Monetary units Multiplication Division Weight and volume units Weight units Area Multiplication Volume, speed, time Weight, volume, division Fractions, division, etc. Basic processes as above Percentage, time, etc. Yield Scale Graph reading Plans	Numeration Addition
2. Planting out	Arithmetical and geometrical progression	Adults' own methods of planting field	$\frac{\text{Length}}{\text{Number}} = \text{Distance between plants}$		Subtraction
3. Ploughing or digging	Speed, depth, time, money, angle	Adults' experience in digging and ploughing	$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$		Multiplication
4. Application of fertilizer	Proportion, fraction, weight, volume, area	Adults' own methods and experience	Rule of three		Division
5. Spraying	Pressure, volume, area	Adults' experiences in these matters	$\text{Quantity} = \text{Area} \times \frac{\text{Quantity}}{\text{Unit area}}$		Linear measurement Weight measurement
6. Irrigation	Rate of flow, volume, time	Adults' traditional methods and knowledge	$\text{Flow} = \frac{\text{Volume}}{\text{Unit of time}}$		Speed, time
7. Harvesting	Yield per unit of area	Adults' own experience	Weight or volume per unit of area		Area
8. Quality and wastage	Fraction and percentage	Adults' own experience	Part related to whole and 100 as unit		Volume
9. Marketing	Costs and prices	Adults' own experience	Profit, selling price, overheads, etc.		Fractions
10. Storage and ensilage	Maximum exploitation of products	Adults' own experience	Cost, benefit, etc.		Percentage
11. Credit	Interest	Adults' own experience	Interest rates		Monetary units

Document 43

Functional Literacy Experiment, San Andrés (Mexico)
Arithmetic card

PROBLEM

Extirpation of gophers.

SITUATION

Preparation of the poison to extirpate the gophers.

OBJECTIVES

Inculcation of simple addition in the technico-occupational solution of the problem of gopher extirpation.

PROCEDURE

The instructor outlines the situation orally: preparation of the poison mixture to kill the gophers requires the following:

Ingredients	*Cost*
Ten kg of maize	$7
Three tubes of strychnine	$9
Colouring matter	$2
One packet of cornflour	$0.40

TEACHING NOTES

The instructor asks:

'How much was spent on the 10 kg of maize?' When the group states the amount ($7), he asks each one to write it down in his exercise-book. He writes it on the blackboard.

'How much was spent in purchasing the strychnine?' When the group replies ($9), he tells them to write the figure beside the 7.

'How much was spent on the colouring matter?' When the group replies ($2), he tells them to write the figure beside the 9.

He then says to the group: 'We have spent $7 plus [*he writes the + sign*] 9, plus [*writing +*] 2. Adding 7 plus 9 plus 2 we realize that we have spent a total of [*writing the = sign*] $18.'

He insists that the group look at the blackboard in order to fill in the corresponding signs:

$$\$7 + 9 + 2 = \$18.$$

'This is what we have spent. Is there anything else? How much does the cornflour cost?' When the group replies that it is 40 centavos, the instructor explains:

'The cornflour costs less than 1 peso, i.e. $0 (zero pesos). The price of the cornflour is 0 pesos 40 centavos which is written thus: $0.40. Now we are going to perform the addition by placing the amounts one under the other:

$7	Seven pesos.
+ $9	Plus nine pesos.
+ $2	Plus two pesos.
+ $0.40	Plus zero pesos forty centavos.

'We add from top to bottom beginning on the right and write the amounts underneath the line.

'The total we have spent is eighteen pesos forty centavos.' The instructor writes 18.40. When the group says 'pesos', he writes the corresponding sign: $18.40.

'When the plus sign is repeated a number of times, it may be written once only'. (The instructor erases the signs, leaving only the last +.)

$7
$9
$2
+ $0.40
$18.40

'The damage done by four or five gophers means a loss of 300 kg of maize per harvest. At present prices this represents $210. Compare the cost of killing the gophers with the losses that it causes.

'Which do you prefer to do: kill the gophers, or not? Why?'

The instructor bides his time and keeps the group discussing the matter until they start thinking in terms of adopting a new policy with an engagement to act on it.

Document 44

Functional Literacy Project, Mornag (Tunisia)
Arithmetic

PROBLEM

Hoeing as a method of working the soil surface contributing to water conservation.

AIMS

To show how arithmetic can help in understanding and respecting working norms.
To practise the class in the addition and subtraction of three-figure numbers.

AIDS

Instructional and material.

TEACHING NOTES
(FOR THE INSTRUCTOR'S USE)

Remember that the arithmetic session is not an end in itself; its purpose is to lead future co-operative members to an understanding of and respect for working norms. It is a means of training the 'pre-co-operator'.
Stress the importance of keeping to working norms: it is an essential condition for achieving the targets set by the co-operative members. Remember that you are a 'pre-co-operator' just like your listeners and that you should, therefore, help to create an atmosphere favourable to free discussion.
Avoid the schoolroom approach: there are no teachers or pupils, simply a group of future pre-co-operators working together to find solutions.

The approximate length of this session is thirty minutes.

PROCEDURE

We know that there are working norms which must be respected in the interest of the pre-co-operative community. As regards hoeing operations, for example, a 'pre-co-operator' should hoe 460 vine stocks per day.

Let us try to mention a few working norms:
Stint for vines, 460 stocks.
Stint for olive-trees, 15. (*Open discussion.*)

Problem

A 'pre-co-operator' should hoe 460 vine stocks per day; Béchir has only done 390 today. Has he observed the norms? Why? (*460 − 390 = 70.*)

Ask the group how one can find the difference between the working norm and work performed.

Write on the blackboard:

$$\begin{array}{r} 460 \\ -\ 390 \\ \hline =\ 70 \end{array}$$

Demand the result and write it down—or have it written, if someone volunteers.

Another worker has done 485 vine stocks. Has he respected the norms? (*Open discussion.*)

Let the group find the answer. (*485 − 460 = 25.*) Same procedure.

How many have they done altogether? They have hoed altogether:

$$\begin{array}{r} 485 \\ +\ 390 \\ \hline =\ 875 \end{array}$$

How many should they do to keep to the norms? They should do:

$$\begin{array}{r} 460 \\ +\ 460 \\ \hline =\ 920 \end{array}$$

How many vines have still to be hoed round if the work programme is not to be held up? There remain:

$$\begin{array}{r} 920 \\ -\ 875 \\ \hline =\ 45 \end{array}$$

Development

Suggest to the group that they rearrange the various numbers shown on the blackboard (460, 390, 70, 485, 25, 875, 920, 45) in decreasing order; write them down from their dictation:

920, 875, 485, 460, 390, 70, 45, 25.

Document 45
Functional Literacy Experiment, Mornag (Tunisia)
Arithmetic

PROBLEM

Board of management of the co-operative.

AIMS

Taking as a starting-point the one-third-renewal procedure of boards of management, utilize the familiar notion of one-third to go on to familiarize the group with the mathematical operations of division and multiplication.

AIDS

Instructional and material.

NOTES

This session relies on the known ability of the listeners to do mental arithmetic; it will suffice, for the success of the session, to give the fullest scope for exchanges within the group.

Approximate length of session: thirty minutes.

PROCEDURE

Group leader	*Comments by the group and blackboard operations*
How many members are there in our board of management?	Nine.
Ask the group to state the term for which the board of management is elected and how its renewal is carried out.	The board of management is elected for a three-year term and is renewed on a one-third basis every year.
We have nine members on our board of management. How many members have to be replaced?	Three.
Write 9 on the blackboard, then 3 opposite it. Say that 3 is one-third of 9.	9 3
What is a third of 12? Same procedure.	12 4
What is a third of 15?	15 5
Of 18?	18 6
Of 30?	30 10
Of 45?	45 15
Of 300?	300 100
Of 330?	330 110
To find one-third of a number, what must we do?	To find one-third of a number, we divide the number by three.

Ask the group to provide a number for the instructor to calculate one-third of it.

Write the calculation reproduced opposite, saying what you are writing:

$$3\overline{)90}\ 30 \qquad 3\overline{)180}\ 60$$

$$3\overline{)15}\ 5 \qquad 3\overline{)9}\ 3$$

$$3\overline{)300}\ 100 \qquad 3\overline{)60}\ 20$$

Provide (and make the group provide) several examples.

Get group members to take your place at the blackboard, set out the calculations and give the results.

Each group member will then attempt to write on a sheet of paper (or exercise-book) the calculations which he makes mentally.

Return to the blackboard and calculate one-third of 12.

$$3\overline{)12}\ 4$$

What is two-thirds of 12? It is 4 plus 4. Write and say this:

$$2 \times 4 = 8$$

Give other examples: 15, 30, 45, 300, etc.

Make group members find first of all one-third and then two-thirds of each number.

$$3\overline{)15}\ 5 \qquad 3\overline{)30}\ 10$$

Get some of the group to write on the blackboard.

$2 \times 5 = 10$ $\qquad$ $2 \times 10 = 20$, etc.

Document 46

Functional Literacy Project (Algeria)
Control questionnaire

This questionnaire should be completed on completion of the sequence and sent immediately to the Centre National d'Alphabétisation (CNA). The CNA elaboration team needs to know the views of group members and instructors and will try to take them into account to improve the effectiveness of the courses.

Avoid vague replies: if you do not know how to reply to a question or if a reply is not possible, it is preferable to leave it unanswered.

In order to complete the questionnaire satisfactorily, we advise you to make notes in an exercise-book at the end of each session, when things are still fresh in your memory.

TIME-TABLE

1. Has the time-table been adhered to?
   ☐ Yes ☐ No
2. If not, why?
   . . . . . .
3. What has been the respective length of each activity at each session?

Subject	Weeks					
	First	Second	Third	Fourth	Fifth	etc.
Training						
Language						
Reading						
Writing						
Arithmetic						

4. Did you observe fatigue and inattention among participants after two hours of instruction? ☐ Yes ☐ No
5. Have you any remarks or suggestions to make concerning:
   (a) The time-table in general?
   (b) The length of each activity?
   . . . . . .

MATERIALS

6. Have you experienced any difficulties in use of the materials? Specifically:
   (a) Are the instructions in each card full enough? ☐ Yes ☐ No
   Practical? ☐ Yes ☐ No
   (b) Is the text of the cards always comprehensible? ☐ Yes ☐ No
   (c) Are the documents easily handled? ☐ Yes ☐ No
   (d) Are the illustrations clear? ☐ Yes ☐ No
   Other remarks: . . . . . .
7. Indicate the activities which seemed to you to be the easiest and the most difficult to prepare and conduct:
   The easiest to prepare: . . . . . .
   The most difficult to prepare: . . . . . .
   The easiest to conduct: . . . . . .
   The most difficult to conduct: . . . . . .
   Other remarks and suggestions: . . . . . .

LEARNERS

8. Indicate the activities in which learners showed the greatest or the least interest:
   The greatest interest: . . . . . .
   The least interest: . . . . . .
   . . . . . .

9. Indicate the activities over which learners seemed to find the most difficulty.
10. Can you give any reasons for this? . . . .
. . . . . .
11. Did learners make any remarks or suggestions concerning:
    (a) Organization of courses?
    (b) Hours of courses?
    (c) Time-table?
    (d) Length of each activity?
    (e) Programme?
    (f) Subjects to be dealt with in future?

Chapter 7

Functional literacy in action

The utilization of the pedagogical methods and materials for the real training operation poses three basic problems:[1]

The recruitment and training of the instructors.

The formation of the literacy groups.

The pedagogical relationship between teachers and pupils and the organization of the group activities which stem from this (i.e. the nature of the functional literacy 'class').

RECRUITMENT AND TRAINING OF INSTRUCTORS[2]

The instructors, considered as a human factor, represent one of the crucial problems of functional literacy projects. An attempt has been made in the table overleaf to provide a schematic classification of the different types of instructor available according to situation and of the problems raised by their training.

The table shows that all the types considered are not equally suitable for rapid accession to the self-sufficiency desired: while category 2 is well placed to become a nursery of future counsellors, instructors in categories 1, 4, 5 and 6 will, on the contrary, require help from an experienced technician for some time.

The disparity between the professional profiles of the instructors makes it necessary to create a corps of inspectors. These inspectors should take the form of pedagogic advisers able to follow the functional literacy operation in the field, calculate the gap between its objectives and its achievements, organize the training of the instructors

1. The problems of functional literacy activities having been dealt with more fully, the reader should therefore refer to Part Two (Chapter 6, Section B).
2. This problem is studied in greater detail in a work shortly to be published entitled *The Training of Functional Literacy Personnel: A Practical Guide.*

Type of instructor available and main training problems

Type of instructor		Main training problems
Drawn from the socio-occupational *milieu*	1. Unsatisfactory technical level.	*Technical training.* Pedagogic training.
	2. Satisfactory technical level.	*Pedagogic training.*
From outside the socio-occupational *milieu*	3. Satisfactory technical level.	*Study of the* milieu. Pedagogic training.
	4. Unsatisfactory technical level.	*Study of the* milieu. Pedagogic training. Technical training.
Teachers	5. From outside the socio-occupational *milieu.*	*Conversion course.* Study of the *milieu.* Technical training.
	6. Drawn from the socio-occupational *milieu.*	*Conversion course. (pedagogical).* Technical training.

Source. International Seminar on Functional Literacy, Tunis, 18 May to 5 June 1970.

and guide them in their work, and co-ordinate the functional literacy operation with the central and local services.

FORMATION OF FUNCTIONAL LITERACY GROUPS

Socio-occupational background as prime consideration

The formation of homogeneous groups is basic to the concept of functional literacy. It is the situation-problems that determine both the educational situations and the make-up of the functional literacy groups.

The socio-occupational background of the individuals and their common interest in taking the same training-sessions should be the determining factors in forming groups.

Literacy levels

The literacy levels of the subjects will be carefully established (using appropriate tests) in order to respect the principle of homogeneous groups.

Mingling of the sexes

Consisting as they do of individuals with a common socio-occupational background, the groups may include both sexes except where considerations of local custom are against it. In such cases, women's groups will be formed.

THE FUNCTIONAL LITERACY 'CLASS'

Use of time

After the programme contents have been split up into annual, monthly and weekly segments, the use of time needs to be organized for each week's activities.

See Document 47, page 169

It is obvious that in drawing up the time-table, allowance must be made for particular circumstances and local working conditions, e.g.: concentration or dispersion of the population in relation to the literacy centres; whether or not the literacy courses are included in the working day; climatic conditions; time of day chosen, etc.

Group activities

Principles. There are basic principles which must never be lost sight of when dealing with adults.

First principle. The adult illiterate is not a pupil but a participant in a global training activity, about which he has his word to say.

Second principle. The literacy group is not a 'class' in the conventional sense of the term. It is a group of responsible people with its own psychology, problems and vitality.

Third principle. The instructor is not a schoolmaster facing his pupils. He is one of the group, a 'master of ceremonies'.

Physical positioning of the group. The participants must work face to face, so that the exchanges can develop with maximum effectiveness.

See Document 48, page 170

Positioning to form a circle, a half-circle, a square, a rectangle or a 'V' seems the most practical way of ensuring that all participate fully in the discussion.

Style of work of the group

Organization of the group. The approved techniques of group leadership require that the instructor does not 'teach' in the traditional sense of the term, that is to say, 'hold the stage' and set himself apart from the group.

It is the group that studies the problems and 'processes' the information provided to it by the participants and the group leader himself. His role should, therefore, consist in: (a) taking all the necessary measures for the organization of group activities; (b) assembling the participants, explaining the objectives of the work session and holding himself at the group's disposition as an authoritative source of information; and (c) helping the group to apprehend the problems which present themselves to it, and taking the necessary decisions.

The atmosphere should be 'permissive' and democratic, each person having the right to make his voice heard.

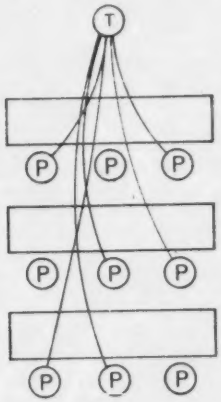
What strikes observers visiting functional literacy groups following the group-leadership methods is the fact that individuals express themselves and take an active part in their own training. Whether learning to read, acquiring technical, scientific or economic knowledge, each participant has his say.

The literacy 'class' then presents the features of a real discussion in the course of which common problems are talked over in an atmosphere conducive to creative thinking. It has been noted in many cases that the discussion groups have afforded the executives (engineers, technicians) their first opportunity of associating the workers (operatives or peasants) in the discussion of the problems arising, and in decision-making. In many situations this has resulted in an improvement of methods and working conditions, and, in particular, of attitudes on both sides.

The learning process, agreed and undertaken on the basis of methods and techniques which can be discussed and challenged, improves the atmosphere at work and in human relationships, and helps towards the adoption of constructive attitudes.

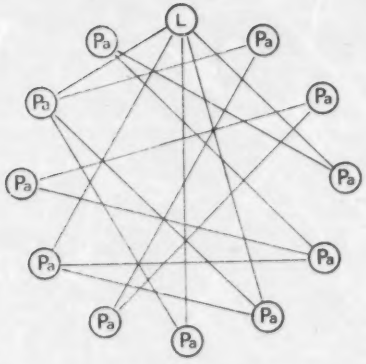
An effort should therefore be made in the literacy groups to get

The 'desk-bound' class



T Teacher
P Pupil

The 'active' class



L Group leader
Pa Participant

Figure 9. The teacher–pupil relationship.

everyone to take part in the common task. The good instructor is the one who knows how to keep silent. He should not 'do the talking' but 'trigger' talk and action so that each person shall have the feeling that he has a role useful to the community.

The organization of the class and the work should be a matter for a group decision.

The conventional class is generally a 'deskbound' class where the particular pupil called on has to reply to the question put to him.

The teacher–pupil relationship is, more often than not, of a 'one-way' character. In the functional literacy 'class', the pedagogical relationship takes the form of a complex network of interactions.

Figure 9 shows how the teacher–pupil relationship differs between the conventional class and the functional literacy 'class'.

Cultural 'self-service'

In all the aspects of the programme, provision should be made for cultural 'self-service' sessions in which participants can help one another (mutual instruction).

The group leader himself should always be ready to assist each participant in solving specific difficulties which may relate to a wide variety of subjects—arithmetic, reading, agricultural techniques, health, and so on.

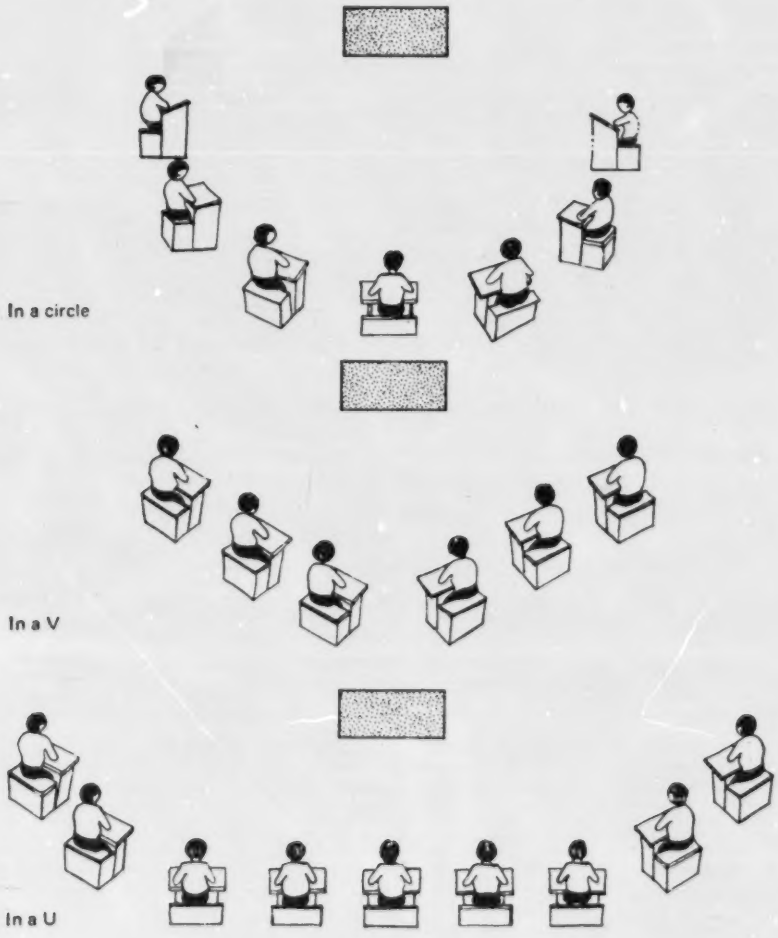
Document 47

Functional Literacy Project (Madagascar)
Befandriana Operation
Use of time

Activity[1]	Monday	Wednesday	Friday
Intellectual development activities (1 hour 30 minutes).	Technical and scientific vocational training (45 minutes).	Vocational training (recapitulation) (10 minutes).	Vocational training (recapitulation) (10 minutes).
		Arithmetic in conjunction with vocational training (40 minutes).	Arithmetic in conjunction with vocational training (40 minutes).
	Reading in conjunction with vocational training.	Reading in conjunction with vocational training.	Reading in conjunction with vocational training.
	Writing I[2] (45 minutes.)	Writing II[2] (40 minutes.)	Writing III[2] (40 minutes.)
Practical activities (no predetermined length).	Training courses for peasants.	Technical assistance provided by the agricultural advisers and literacy instructors.	
	Practical demonstrations within the context of regular work.		

1. The instructor works with two groups of illiterates: Group 1, Mondays, Wednesdays, Fridays; Group 2, Tuesdays, Thursdays, Saturdays.
2. See reading card on transplanting (Document 34).

Document 48
Possible positionings of participants
in a community-activities session



General conclusion

As a conclusion to this rapid survey of functional literacy methodology, it is worth while drawing attention to the importance, in training for development, of knowledge of the *milieu* and of the permanent dialogue that should be established with it. The motivation is inseparable from problems and needs, as is the authentic education itself.

This is why, in this education, the 'ecological' relationship becomes the major pedagogical relationship.

Learning methods and techniques are determined in terms of their appropriateness and of a 'Grand Design': man's adaptation to and management of change, with a view to his emancipation and full development.

Postscript

As will have been observed, the preceding pages do not cover everything: problems undoubtedly still remain unsolved, others demand clarification and detailed study.

How can educational strategy be adjusted more effectively to development strategy?

How can programmes be prepared which are as functional as possible, i.e. responding effectively to individual and collective needs scientifically identified?

How can an *ad hoc* pedagogy be developed which will be self-regulating, adapted to the exigencies of the concrete action, to the mentalities, the individual and collective representations and characteristics of the subjects?

Briefly, how are we to train these people, to facilitate their adaptation to and participation in the changes that development necessitates?

The fact of raising these issues emphasizes the open-ended nature of this guide.

The outcome of a joint effort, this guide remains an unfinished work for all.

Readers are therefore invited to send us their comments, criticisms and, above all, documents (studies, model survey instruments, pedagogic prototypes, etc.) which will enable present short-comings to be remedied and an increasingly effective response made to the needs and expectations of all.